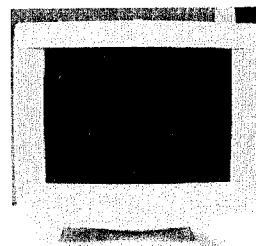


# Service Service Service



21A582BH/00C



DDC/Audio/Power saving/Tilt correction

# Service Manual

Horizontal frequencies  
30 - 115 kHz

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REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

## SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

**CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.**



# PHILIPS

## IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company\*\* Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

\*\* Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

### WARNING

Critical components having special safety characteristics are identified with a  by the Ref. No. in the parts list and enclosed within a broken line\* (where several critical components are grouped in one area) along with the safety symbol  on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

\* Broken Line 

FOR PRODUCTS CONTAINING LASER :

DANGER- Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

CAUTION- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION- The use of optical instruments with this product will increase eye hazard.

**TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.**

\*\*\*\*\*  
 ty107a.chk  
 \*\*\*\*\*

Normal Display, No stereo  
 Digital Separate Sync  
 Positive V Sync  
 Negative H Sync

## Vendor/Product Identification

ID Manufacturer Name : PHL  
 ID Product Code : 1021  
 ID Serial Number : 123456  
 Week of Manufacture : 49  
 Year of Manufacture : 1997

## EDID Version, Revision

Version : 1  
 Revision : 1

## Basic Display Parameters/Features

Video Input Definition : Analog Video Input  
 0.700V/0.300V (1.00Vpp)  
 without Blank-to-Black Setup  
 Separate Sync  
 Composite Sync  
 Sync on Green  
 no Serration required

Maximum H Image Size : 38 cm

Maximum V Image Size : 29 cm

Display Transfer Characteristic: 2.800  
 (gamma)

Feature Support (DPMS) : Standby  
 Suspend  
 Active Off  
 RGB color display

## Color Characteristics

Red X coordinate : 0.625  
 Red Y coordinate : 0.340  
 Green X coordinate : 0.285  
 Green Y coordinate : 0.605  
 Blue X coordinate : 0.150  
 Blue Y coordinate : 0.065  
 White X coordinate : 0.281  
 White Y coordinate : 0.311

## Established Timings

Established Timings I : 640 x 480 @60Hz (VGA,IBM)  
 640 x 480 @75Hz (VESA)  
 Established timings II : 800 x 600 @75Hz (VESA)  
 1024 x 768 @75Hz (VESA)  
 1280 x 1024 @75Hz (VESA)  
 Manufacturer's timings : 1152 x 870 @75Hz

(MacII,Apple)

## Standard Timing Identification #1

Horizontal active pixels : 800  
 Aspect Ratio : 4:3  
 Refresh Rate : 85

## Standard Timing Identification #2

Horizontal active pixels : 1024  
 Aspect Ratio : 4:3  
 Refresh Rate : 85

## Standard Timing Identification #3

Horizontal active pixels : 1280  
 Aspect Ratio : 5:4  
 Refresh Rate : 85

## Detailed Timing #1

Pixel Clock (MHz) : 25.170  
 H Active (pixels) : 640  
 H Blanking (pixels) : 160  
 V Active (lines) : 400  
 V Blanking (lines) : 49  
 H Sync Offset (F Porch) (pixels): 16  
 H Sync Pulse Width (pixels) : 96  
 V Sync Offset (F Porch) (lines): 12  
 V Sync Pulse Width (lines) : 2  
 H Image Size (mm) : 380  
 V Image Size (mm) : 285  
 H Border (pixels) : 8  
 V Border (lines) : 7  
 Flags : Non-interlaced  
 Normal Display, No stereo

## Detailed Timing #2

Pixel Clock (MHz) : 108.000  
 H Active (pixels) : 1152  
 H Blanking (pixels) : 352  
 V Active (lines) : 900  
 V Blanking (lines) : 43  
 H Sync Offset (F Porch) (pixels): 16  
 H Sync Pulse Width (pixels) : 64  
 V Sync Offset (F Porch) (lines): 2  
 V Sync Pulse Width (lines) : 8  
 H Image Size (mm) : 380  
 V Image Size (mm) : 285  
 H Border (pixels) : 0  
 V Border (lines) : 0  
 Flags : Non-interlaced

Normal Display, No stereo  
 Digital Separate Sync  
 Positive V Sync  
 Positive H Sync

## Detailed Timing #3

Pixel Clock (MHz) : 229.500  
 H Active (pixels) : 1600  
 H Blanking (pixels) : 560  
 V Active (lines) : 1200  
 V Blanking (lines) : 50  
 H Sync Offset (F Porch) (pixels): 64  
 H Sync Pulse Width (pixels) : 192  
 V Sync Offset (F Porch) (lines): 1  
 V Sync Pulse Width (lines) : 3  
 H Image Size (mm) : 380  
 V Image Size (mm) : 285  
 H Border (pixels) : 0  
 V Border (lines) : 0  
 Flags : Non-interlaced

Normal Display, No stereo  
 Digital Separate Sync  
 Positive V Sync  
 Positive H Sync

## Detailed Timing #4

Pixel Clock (MHz) : 256.140  
 H Active (pixels) : 1800  
 H Blanking (pixels) : 629  
 V Active (lines) : 1350  
 V Blanking (lines) : 56  
 H Sync Offset (F Porch) (pixels): 133  
 H Sync Pulse Width (pixels) : 192  
 V Sync Offset (F Porch) (lines): 7  
 V Sync Pulse Width (lines) : 3  
 H Image Size (mm) : 380  
 V Image Size (mm) : 285  
 H Border (pixels) : 0  
 V Border (lines) : 0  
 Flags : Non-interlaced

Normal Display, No stereo  
 Digital Separate Sync  
 Positive V Sync  
 Positive H Sync

Extension Flag

: 0

Check sum

: 74(0x)

## Hex Data of DDC1/2B(107k)

## For Hitachi CRT

0: 0	1: ff	2: ff	3: ff	4: ff	5: ff	6: ff	7: 0
8: 41	9: c	10: 21	11: 10	12: 40	13: e2	14: 1	15: 0
16: 31	17: 7	18: 1	19: 1	20: e	21: 26	22: 1d	23: b4
24: e8	25: 0	26: b2	27: a0	28: 57	29: 49	30: 9b	31: 26
32: 10	33: 48	34: 4f	35: 24	36: 43	37: 80	38: 45	39: 59
40: 61	41: 59	42: 81	43: 99	44: 1	45: 1	46: 1	47: 1
48: 1	49: 1	50: 1	51: 1	52: 1	53: 1	54: d5	55: 9
56: 80	57: a0	58: 20	59: 90	60: 31	61: 10	62: 10	63: 60
64: c2	65: 0	66: 7c	67: 1d	68: 11	69: 8	70: 7	71: 1c
72: 30	73: 2a	74: 80	75: 60	76: 41	77: 84	78: 2b	79: 30
80: 10	81: 40	82: 28	83: 0	84: 7c	85: 1d	86: 11	87: 0
88: 0	89: 1e	90: a6	91: 59	92: 40	93: 30	94: 62	95: b0
96: 32	97: 40	98: 40	99: c0	100: 13	101: 0	102: 7c	103: 1d
104: 11	105: 0	106: 0	107: 1e	108: e	109: 64	110: 8	111: 75
112: 72	113: 46	114: 38	115: 50	116: 85	117: c0	118: 73	119: 0
120: 7c	121: 1d	122: 11	123: 0	124: 0	125: 1e	126: 0	127: 74



\*\*\*\*\*  
 ty115new.chk  
 \*\*\*\*\*

## Vendor/Product Identification

ID Manufacturer Name : PHL  
 ID Product Code : 1121  
 ID Serial Number : 123456  
 Week of Manufacture : 49  
 Year of Manufacture : 1997

## EDID Version, Revision

Version : 1  
 Revision : 1

## Basic Display Parameters/Features

Video Input Definition : Analog Video Input  
 0.700V/0.300V (1.00Vpp)  
 without Blank-to-Black Setup  
 Separate Sync  
 Composite Sync  
 Sync on Green  
 no Serration required  
 Maximum H Image Size : 38 cm  
 Maximum V Image Size : 29 cm  
 Display Transfer Characteristic: 2.800  
 (gamma)  
 Feature Support (DPMS) : Standby  
 Suspend  
 Active Off  
 RGB color display

## Color Characteristics

Red X coordinate : 0.625  
 Red Y coordinate : 0.340  
 Green X coordinate : 0.285  
 Green Y coordinate : 0.605  
 Blue X coordinate : 0.150  
 Blue Y coordinate : 0.065  
 White X coordinate : 0.281  
 White Y coordinate : 0.311

## Established Timings

Established Timings I : 640 x 480 @60Hz (VGA,IBM)  
 640 x 480 @75Hz (VESA)  
 Established timings II : 800 x 600 @75Hz (VESA)  
 1024 x 768 @75Hz (VESA)  
 1280 x 1024 @75Hz (VESA)  
 Manufacturer's timings : 1152 x 870 @75Hz (MacII,Apple)

## Standard Timing Identification #1

Horizontal active pixels : 800  
 Aspect Ratio : 4:3  
 Refresh Rate : 85

## Standard Timing Identification #2

Horizontal active pixels : 1024  
 Aspect Ratio : 4:3  
 Refresh Rate : 85

## Standard Timing Identification #3

Horizontal active pixels : 1280  
 Aspect Ratio : 5:4  
 Refresh Rate : 85

## Standard Timing Identification #4

Horizontal active pixels : 1600  
 Aspect Ratio : 4:3  
 Refresh Rate : 85

## Detailed Timing #1

Pixel Clock (MHz) : 25.170  
 H Active (pixels) : 640  
 H Blanking (pixels) : 160  
 V Active (lines) : 400  
 V Blanking (lines) : 49  
 H Sync Offset (F Porch) (pixels): 16  
 H Sync Pulse Width (pixels) : 96  
 V Sync Offset (F Porch) (lines): 12

V Sync Offset (F Porch) (lines): 12

V Sync Pulse Width (lines) : 2

H Image Size (mm) : 380

V Image Size (mm) : 285

H Border (pixels) : 8

V Border (lines) : 7

Flags : Non-interlaced  
 Normal Display, No stereo  
 Digital Separate Sync  
 Positive V Sync  
 Negative H Sync

## Detailed Timing #2

Pixel Clock (MHz) : 108.000

H Active (pixels) : 1152

H Blanking (pixels) : 352

V Active (lines) : 900

V Blanking (lines) : 43

H Sync Offset (F Porch) (pixels): 16

H Sync Pulse Width (pixels) : 64

V Sync Offset (F Porch) (lines): 2

V Sync Pulse Width (lines) : 8

H Image Size (mm) : 380

V Image Size (mm) : 285

H Border (pixels) : 0

V Border (lines) : 0

Flags : Non-interlaced  
 Normal Display, No stereo  
 Digital Separate Sync  
 Positive V Sync  
 Positive H Sync

## Detailed Timing #3

Pixel Clock (MHz) : 243.230

H Active (pixels) : 1600

H Blanking (pixels) : 562

V Active (lines) : 1200

V Blanking (lines) : 50

H Sync Offset (F Porch) (pixels): 66

H Sync Pulse Width (pixels) : 192

V Sync Offset (F Porch) (lines): 1

V Sync Pulse Width (lines) : 3

H Image Size (mm) : 380

V Image Size (mm) : 285

H Border (pixels) : 0

V Border (lines) : 0

Flags : Non-interlaced  
 Normal Display, No stereo  
 Digital Separate Sync  
 Positive V Sync  
 Positive H Sync

## Detailed Timing #4

Pixel Clock (MHz) : 256.140

H Active (pixels) : 1800

H Blanking (pixels) : 629

V Active (lines) : 1350

V Blanking (lines) : 56

H Sync Offset (F Porch) (pixels): 133

H Sync Pulse Width (pixels) : 192

V Sync Offset (F Porch) (lines): 7

V Sync Pulse Width (lines) : 3

H Image Size (mm) : 380

V Image Size (mm) : 285

H Border (pixels) : 0

V Border (lines) : 0

Flags : Non-interlaced  
 Normal Display, No stereo  
 Digital Separate Sync  
 Positive V Sync  
 Positive H Sync

Extension Flag

0

Check sum

c(hex)

## Hex Data of DDC1/2B (FOR 115K)

For Hitachi CRT

0: 0	1: ff	2: ff	3: ff	4: ff	5: ff	6: ff	7: 0
8: 41	9: c	10: 21	11: 11	12: 40	13: e2	14: 1	15: 0
16: 31	17: 7	18: 1	19: 1	20: e	21: 26	22: 1d	23: b4
24: e8	25: 0	26: b2	27: a0	28: 57	29: 49	30: 9b	31: 26
32: 10	33: 48	34: 4f	35: 24	36: 43	37: 80	38: 45	39: 59
40: 61	41: 59	42: 81	43: 99	44: a9	45: 59	46: 1	47: 1
48: 1	49: 1	50: 1	51: 1	52: 1	53: 1	54: d5	55: 9
56: 80	57: a0	58: 20	59: 90	60: 31	61: 10	62: 10	63: 60
64: c2	65: 0	66: 7c	67: 1d	68: 11	69: 8	70: 7	71: 1c
72: 30	73: 2a	74: 80	75: 60	76: 41	77: 84	78: 2b	79: 30
80: 10	81: 40	82: 28	83: 0	84: 7c	85: 1d	86: 11	87: 0
88: 0	89: 1e	90: 3	91: 5f	92: 40	93: 32	94: 62	95: b0
96: 32	97: 40	98: 42	99: c0	100: 13	101: 0	102: 7c	103: 1d
104: 11	105: 0	106: 0	107: 1e	108: e	109: 64	110: 8	111: 75
112: 72	113: 46	114: 38	115: 50	116: 85	117: c0	118: 73	119: 0
120: 7c	121: 1d	122: 11	123: 0	124: 0	125: 1e	126: 0	127: c

## Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol **▲**.
2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approximately 30 seconds).
3. **ESD** **▲**  
All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the ground of the unit. Keep components and tools also at this same potential.
4. When repairing a unit, always connect it to the AC Power voltage via an isolating transformer.
5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.
6. It is recommended that safety goggles be worn when replacing the picture tube.
7. When making adjustments, use plastic rather than metal tools. This will prevent any short-circuit or the danger of a circuit becoming unstable.
8. Never replace modules or other components while the unit is switched on.
9. Together with the deflection unit, the picture tube is used as an integrated unit. Adjustment of this unit during repair is not recommended.
10. After repair, the wiring should be fastened in place with the cable clamps.

## Notes

1. The direct voltages and waveforms are average voltages. They have been measured using the Service test software and under the following conditions :
  - Mode : 1024 \* 768 (56.5kHz / 70Hz)
  - Signal pattern : grey scale
  - Adjust brightness and contrast control for the mechanical mid-position (click position)
2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

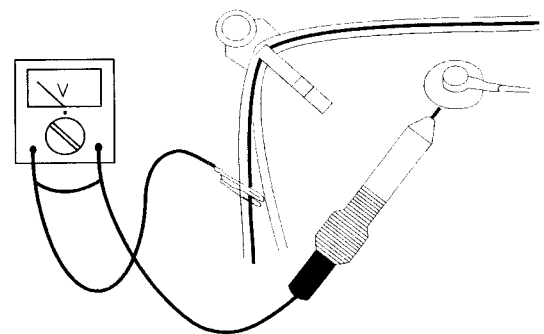


Fig.1

# Electrical Adjustments

## 0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 115kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727 21046 (GPT-1600).

0.1 This monitor has 14 factory-preset modes as below.

640 x 400 31.5 kHz/70 Hz	1152 x 870 68.7 kHz/75 Hz
640 x 480 31.5 kHz/60 Hz	1152 x 900 71.8kHz/76Hz
640 x 480 37.5 kHz/75 Hz	1280 x 1024 80.0 kHz/75 Hz
800 x 600 46.9 KHz/75Hz	1280 x 1024 91.1 kHz/85Hz
800 x 600 53.7 kHz/85Hz	1600 x 1200 106.25 kHz/85 Hz
1024 x 768 60.0 kHz/75 Hz	1800 x 1350 105.45kHz/75Hz
1024 x 768 68.7 kHz/85 Hz	1600 x 1200 112.5kHz/90Hz

0.2 With normal VGA card:

If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.3 AC/DC Measurement:

The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale".  
Power input: 110V AC

## 1. B+ supply voltage (3194) 210Vdc

- Apply a video signal in the 1024 x 768 with 69 kHz/85Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Pre-set trimming potentiometer 3194(+) and 3644(EHT) in mid-position.
- Set Vg2 (screen) to fully Counter-clockwise (zero beamcurrent).
- Connect a dc voltmeter between the joint of capacitor 2181 and ground (common ground).
- Set the B+ trimming potentiometer 3194 so that the reading on the dc voltmeter is 210 V +/- 0.5 Vdc.

## 2. High-voltage EHT (3644)

- Apply a video signal in the 1024 x 768 with 69 kHz/85Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Turn off the power.
- Connect a "high-voltage voltmeter" between the high-voltage connection of the picture tube and earth.
- Turn on the power.
- Set the EHT trimming potentiometer 3644 so that the "high-voltage voltmeter" reads 26.8 kV +/- 0.2 kV (for 21").

- Turn off the power.
- Remove the "high-voltage voltmeter" from the picture tube.
- Turn on the power again.
- Remove the "high-voltage voltmeter" from the picture tube.
- Turn on the power again.

## 3. Monitor the following auxiliary voltages.

- + 12.0V SOURCE ACROSS C2192 + 12.0V +/- 0.5VDC.
- + 15.0V SOURCE ACROSS C2187 + 15.0V +/- 1.0VDC.
- 15.0V SOURCE ACROSS C2189 - 15.0 V +/- 1.0VDC.
- + 6.3 V SOURCE ACROSS D6195 "-" 6.3V +/- 0.5VDC.
- +145.0V SOURCE ACROSS C2182 +145.0V +/- 2.0VDC.
- +210.0V SOURCE ACROSS C2181 + 210.0V +/- 1.5VDC.
- + 81.0V SOURCE ACROSS C2185 + 81.0 V +/- 2.0VDC.

## 4. General conditions for alignment

- 4.1 During all alignments, supply a distortion free AC mains voltage to set via an isolating transformer with low internal impedance.
- 4.2 Align in pre-warmed condition, at least 30 minutes warm-up with nominal picture brightness.
- 4.3 Purity, geometry and subsequent alignments should be carried out in with correct magnetic field.


Northern hemisphere : H=0, V=430 mG, Z=0

Southern hemisphere : H=0, V=-520 mG, Z=0







Equatorial Support : H=0, V=0 mG, Z=0

- 4.4 All voltages are to be measured or applied with respect to ground.

**Note: Do not use heatsink as ground.**

- 4.5 Adjust function controls "  " to center position except for contrast control which should be set to MAX.
- 4.6 Apply a video signal in the 1024 x 768 with 69kHz/85Hz mode, select cross hatch pattern, set the Brightness for visible raster, adjust H-size for 380mm (21" monitor)  
"raster width", adjust R3551 for Horizontal raster center.

## 5. To access factory mode:

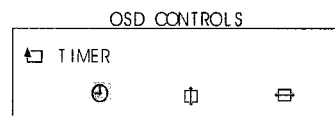
- Turn off monitor (don't turn off PC)
  - Press "  " and "  " simultaneously on the front control panel, until the OSD menu with characters " factory mode (below OSD menu)" come on the screen of monitor.
  - Highlighting on factory mode, then enter, that aglintou display on screen, 2nd procedure must carried out from aglintou to aglintof.
  - If OSD menu disappears on the screen of monitor, press "  " again (anytime), then the OSD menu comes on the screen again.
  - using "  " : to select OSD menu.
  - using "  " : to increase or decrease the setting.
- (Please also refer to page 4,5,6 and 7 for OSD adjustment)
- Using "  " to confirm the selection.




## 5.1. To leave factory mode

\* After alignment of factory mode, Select EXIT mode then turn off monitor (if you do not select EXIT mode then turn off monitor, the OSD menu is always at the factory mode), then turn on monitor again (at this moment, the OSD menu is always at factory mode).

## 6. OSD CONTROLS (During alignment)

During alignment, please use the "OSD controls" to keep OSD menu, or to shift OSD menu as below.



-  **TIMER** Set OSD display time, select "OFF", then the OSD menu will stay on the screen (won't disappear).
-  **VERTICAL POSITION** Move the OSD windows up or down.
-  **HORIZONTAL POSITION** Move the OSD window left or right.

## 7. Alignment of Vg2 cut-off point, white tracking (OSD control)

Equipment : 1. Video Test Generator-801GC (Quantum Data)  
2. Color-analyzer (Minolta CA-100)

VG2 [(screen), at the bottom of the L.O.T.].

- \* Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode, select the "full white pattern".
- \* Use color-analyzer (Minolta CA-100) to adjust cutoff and white uniformity.

OSD R/G/B cut-off and R/G/B gain can be accessed, with initial data:

R cutoff = 30%, R gain = 70%  
G cutoff = 30%, G gain = 70%  
B cutoff = 30%, B gain = 70%

Step 1: To select the character "FACTORY MODE" as shown in Fig. 2.1, press " " to access the OSD menu for R/G/B gain & cutoff as shown in Fig. 2.2.

Step 2: Use " " to increase or decrease the value as shown in Fig. 2.3.

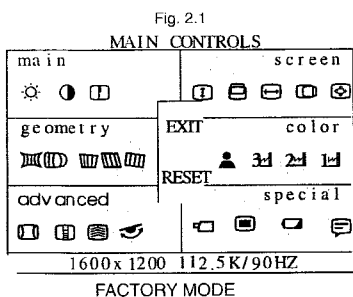


Fig. 2.2  
FACTORY MODE

	GAIN	CUTOFF
9300K	R G B	R G B SUB
6500K	R G B	R G B SUB
5500K	R G B	R G B SUB
FULL-SIZE:	H V	
LINEARITY:	H V	V-BAL
EXIT	ALIGN TO F	

FACTORY MODE

	GAIN	CUTOFF
9300K	R G B	R G B SUB
6500K	R G B	R G B SUB
5500K	R G B	R G B SUB
FULL-SIZE:	H V	
LINEARITY:	H V	V-BAL
EXIT	ALIGN TO F	63%

Fig. 2.3

- 7.1 Connect the video input, set brightness control at 50% and contrast at minimum position, Vg2 at Minimum (counter clockwise, and ABL (3647, potentiometer) at center position. Slowly increase Vg2 voltage until light output is at 0.17Ft-L +/- 0.05Ft-L (Y=0.17Ft-L, on the screen of CA-100).
- 7.2 (The screen of monitor is dark now)
  - : Press " " to show the OSD menu as shown in Fig. 2.1.
  - : Select the character "FACTORY MODE" to access the R/G/B adjustment as shown in Fig. 2.2 and Fig. 2.3.
  - : Adjust the cutoff of R/G/B to get 9300K (x=0.281 +/- 0.015, y=0.311 +/- 0.015), and brightness output at 0.17 +/- 0.05 Ft-L (Y=0.17Ft-L).
- 7.3 : Press " " to set contrast at maximum (100%).
  - : Adjust gain of R/G/B to get 9300K (x=0.281 +/- 0.015, y=0.311 +/- 0.015, don't care about the Y value)
- 7.4 Apply a small white square 60 x 60 mm pattern, or 8% fill of full screen, brightness set to center (50%), and contrast at maximum (100%), adjust sub-contrast control (OSD) to reach 32 +/- 2 Ft-L.
- 7.5 : Select the 6500K colour temperature as shown in Fig. 2.2.
  - : Adjust the R/G/B cutoff and R/G/B gain as shown in procedure 7.2~7.4 to get R/G/B cutoff
 
$$\begin{aligned} x &= 0.313 \pm 0.015 \\ y &= 0.329 \pm 0.015 \\ Y &= 0.17 \pm 0.05 \text{ Ft-L} \end{aligned}$$
 R/G/B gain
 
$$\begin{aligned} x &= 0.313 \pm 0.015 \\ y &= 0.329 \pm 0.015 \\ Y &= 28 \pm 2 \text{ Ft-L} \end{aligned}$$

- 7.6 : Select the 5500K colour temperature as shown in Fig. 2.2.
  - : Adjust the R/G/B cutoff & R/G/B gain as procedure 7.2~7.4

to get R/G/B cutoff
 
$$\begin{aligned} x &= 0.332 \pm 0.015 \\ y &= 0.347 \pm 0.015 \\ Y &= 0.17 \pm 0.05 \text{ Ft-L} \end{aligned}$$
 R/G/B gain
 
$$\begin{aligned} x &= 0.332 \pm 0.015 \\ y &= 0.347 \pm 0.015 \\ Y &= 25 \pm 2 \text{ Ft-L} \end{aligned}$$

- 7.7 Apply full white pattern at 9300K, adjust ABL R3647 to reach 32 +/- 2 Ft-L (21") (contrast at maximum, brightness at maximum).

## 8. Picture geometry setting (factory pre-set modes)

- Apply a video signal with cross-hatch pattern.
- Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode.
- Set brightness and contrast controls to their center positions (OSD control).

- 8.1 Horizontal geometry (OSD control)
  - Adjust the H-width to 380 mm (for 21" monitor).
  - Adjust the H-phase to center position.

- 8.2 Vertical geometry (OSD control)
  - Adjust vertical size to 285 mm (for 21" monitor).
  - Adjust V-phase to center position.

- 8.3 Trapezoid distortion (OSD control)
  - Adjust the trapezoid to get optimal vertical lines.

- 8.4 Pincushion (OSD control)
  - Adjust the pincushion to get optimal vertical line.

- 8.5 Parallelogram (OSD control)
  - Adjust parallelogram so that vertical lines are vertical or symmetrically about the center vertical axis.

- 8.6 Unbalance-pin (OSD control)
  - Adjust the unbalance-pin so that that vertical border lines are aligned symmetrically.

- 8.7 Rotation (OSD control)
  - Adjust picture so that vertical tilt is less than +/- 0.5mm.

- 8.8 Store the preset results by selecting the "exit" (OSD control).

- 8.9 Repeat the procedure 8.1 to 8.8 until all the preset timings have been adjusted completely

## 9. Focus adjustment

- : Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode.
- : Select " @ " pattern.
- : Set the brightness at center (50%) and the contrast at maximum (100%).
- : Adjust focus potentiometers (top of L.O.T.) Focus 1 for horizontal focus and Focus 2 for vertical focus so that the picture at 2/3 of the diagonal lines (from center to four corners) of the displayed screen is as sharp as possible.

## 10. Loading DDC code

The DDC HEX data should be written into the DDC C (7331) by EEPROM writer or equivalent method.

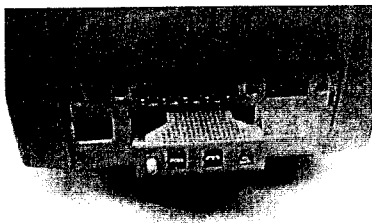
- a: Service DDC Kit
  - DDC Module (DDC cable), Part number = 4822 320 1004
  - DDCV2N.EXE software (3.5" disk), Part number = 4822 711 0002 4
- b: Please refer to Service information 4822 727 21995 for using the Service DDC Kit.

## USB Connections

### If you have Windows '95...

follow these steps to complete setting up your monitor.

1. Start Windows '95 and install CD ROM supplied with this monitor.
2. Click on the "START" icon. Next, click on the "SETTINGS" icon. Then click on "CONTROL PANEL."
3. Double-click on "DISPLAY" icon. Next, click on "SETTINGS" tab. Then click on "ADVANCED PROPERTIES" dialog box.
4. Click on "MONITOR" tab.
- 5.(a) If you have an old computer, click on "CHANGE" dialog box. Next, "SELECT DEVICE" screen appears. Now click on "HAVE DISK" dialog box. and select CD-ROM drive  
Or
- 5.(b) If you have a new computer, "SELECT DEVICE" screen automatically appears. Click on "HAVE DISK" dialog box and select CD-ROM drive.
6. Select "OK" in the "INSTALL FROM DISK" dialog box. If model name of the Philips monitor is correct, click "OK" tab in the "SELECT DEVICE" dialog box.
7. Click "CLOSE" tab in the "ADVANCED PROPERTIES" dialog box. If your Windows'95 version is different or you need more detailed installation information, please refer to the windows '95 user's manual. **For additional information on the monitor, please refer to the owner's manual.**



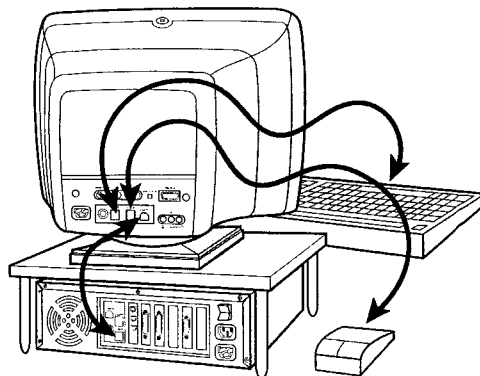
### USB CONNECTIONS

USB (Universal Serial Bus ) is an innovation in connecting your IBM- compatible computer to your monitor. By using the USB, you will be able to connect your keyboard, mouse, printer, and other peripherals to your monitor instead of having to connect them to your computer. This will give you greater flexibility in setting up your system. Plus, you will have true plug-and-play capability. While the software is still being developed, Philips has included the hardware so you will be ready to take advantage of this next generation in computer development.

For an IBM-compatible Computer:

1. Turn off the computer.
2. Connect the (optional) USB Hub and cable to the computer and to the monitor. (Computer must have USB port.)
3. Connect the power cable.
4. Turn on the monitor. Then turn on the computer.
5. With the installation of the correct software, you will be able to connect specially-made peripherals to the monitor.

Note : USB Hub and cables sold separately. USB Bay exists in back of monitor.



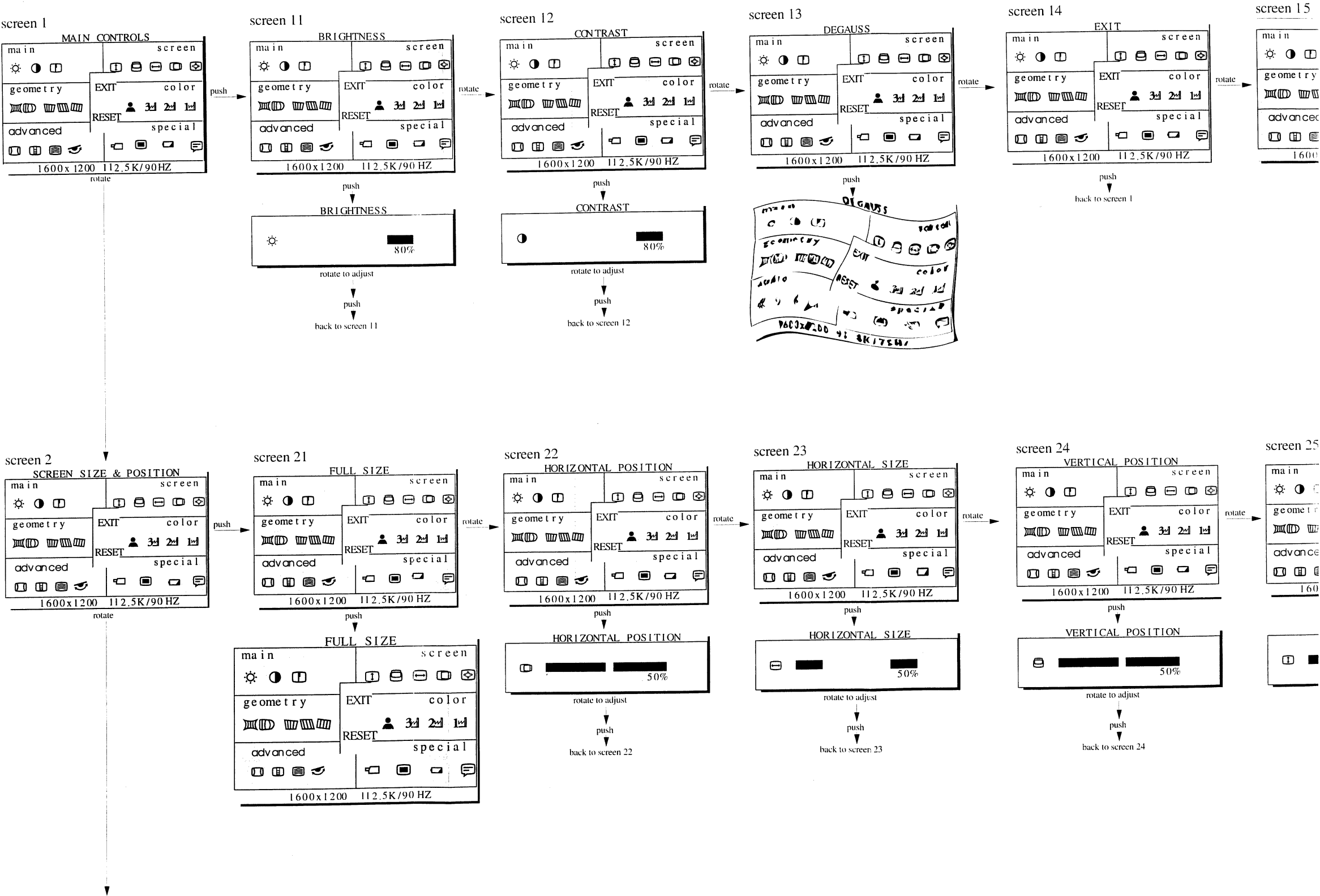
## Use the information file (philips.inf) for Windows '95 (Philips Monitors-Driver Disk)

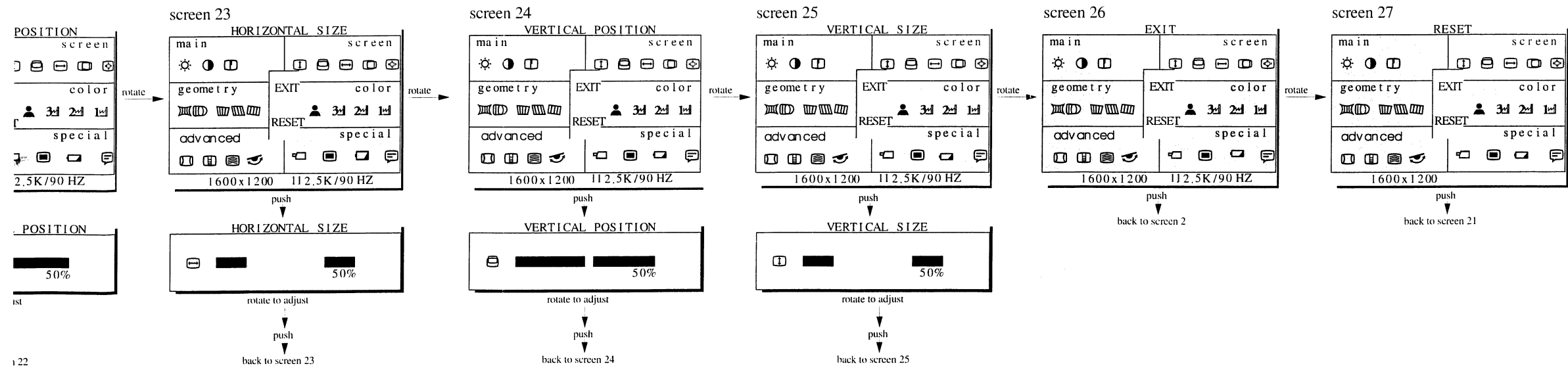
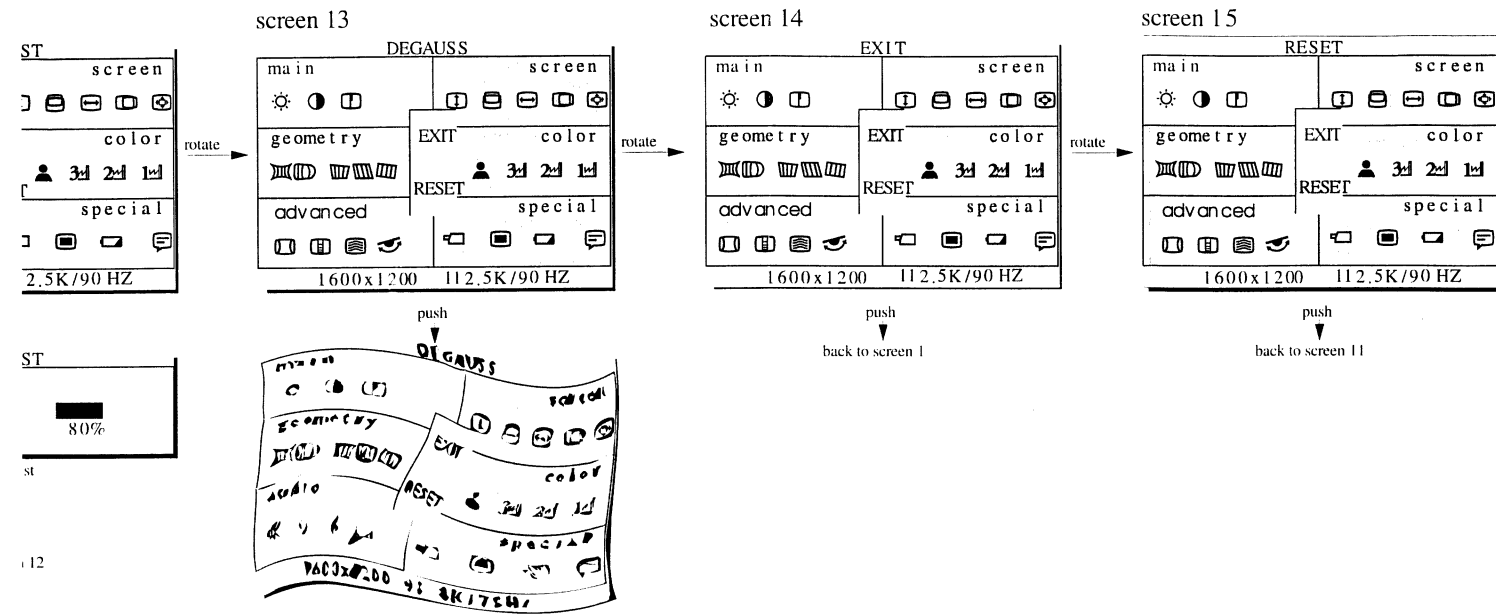
Philips' monitors build in VESA DDC1/2B feature to support Plug & Play requirement for Windows'95. You can install this information file (philips.inf) in order to select your Philips monitor from "Monitor" dialog box in Windows 95 to activate Plug & Play application. The installation procedure based on Windows '95 OEM Release 2 is specified as follows,

1. Start Windows'95
2. Click the 'Start' button, point to 'Settings', and then click 'Control Panel'
3. Double-click the 'Display' icon, select the 'Settings' tab, then select "Advanced Properties" tab.
4. Select "Ok" in the "Install From Disk" dialog box.
5. Now, you can see the Philips monitor is appeared.
6. If the model name of Philips monitor is correct, click "Ok" tab in "Select Device" dialog box.
7. Then, click "Close" tab in "Advanced Properties" dialog box.
8. Now, you can select "Refresh Rate" to change monitor resolution

If your Windows'95 version is different or you need more detail installation information, please refer to Windows 95 user's manual.

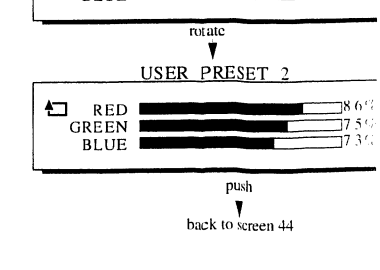
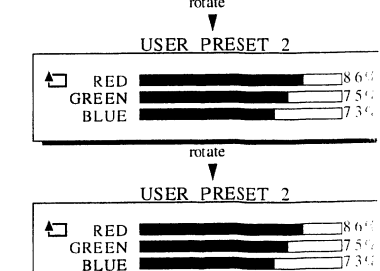
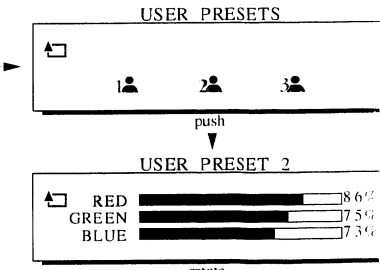
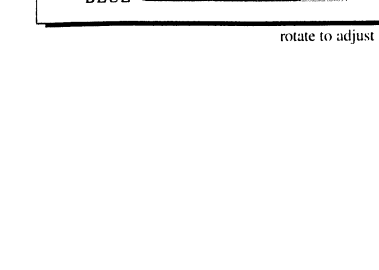
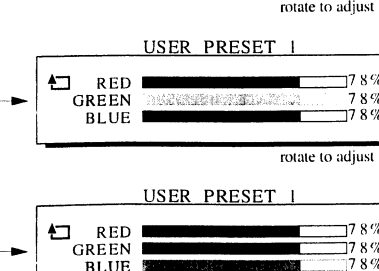
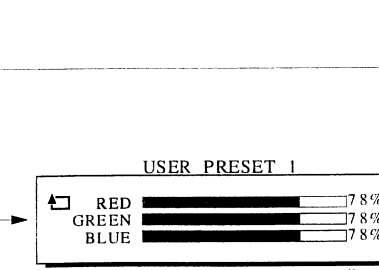
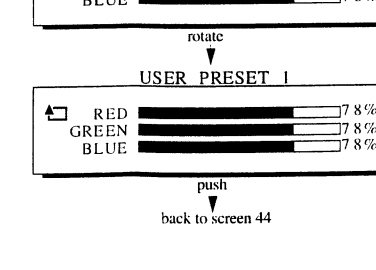
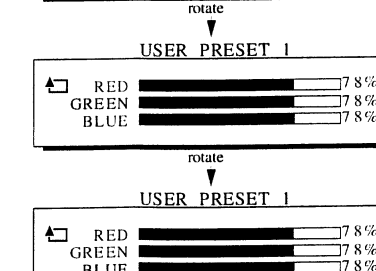
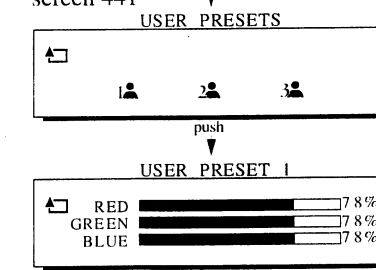
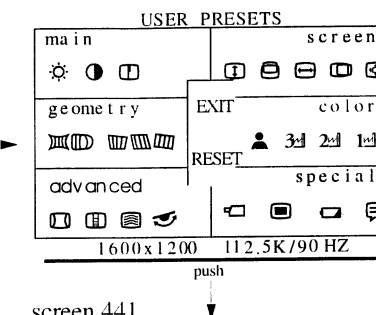
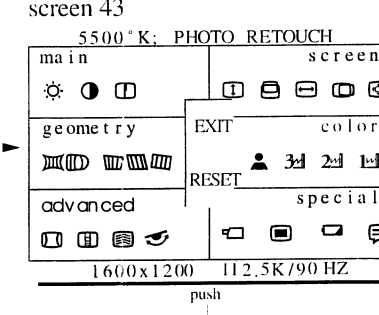
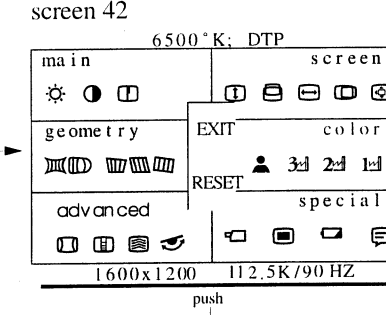
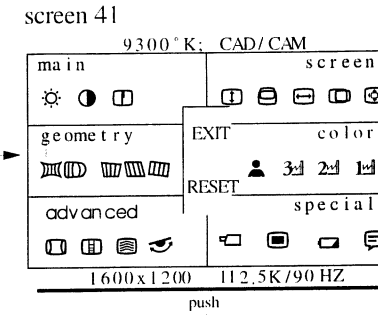
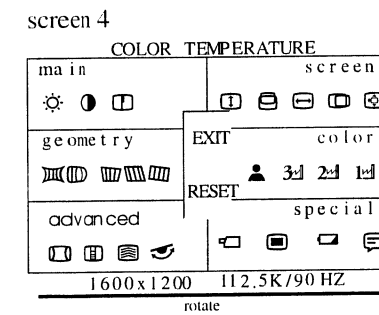
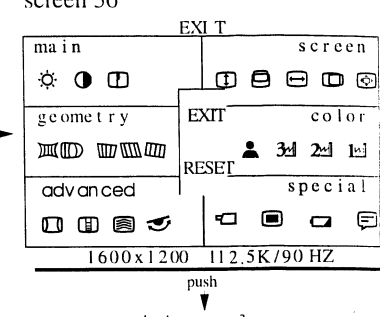
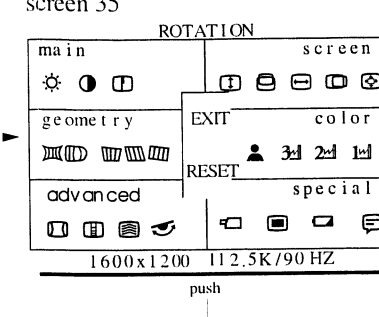
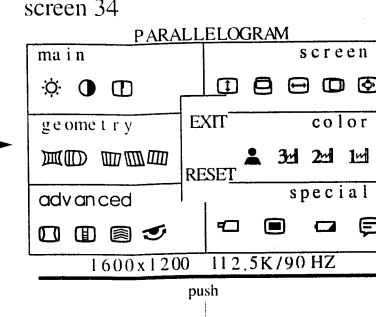
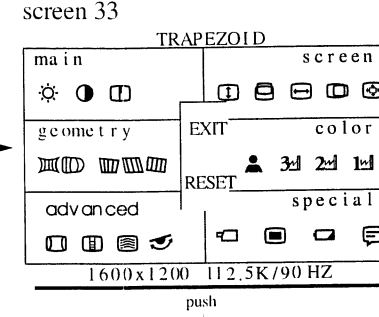
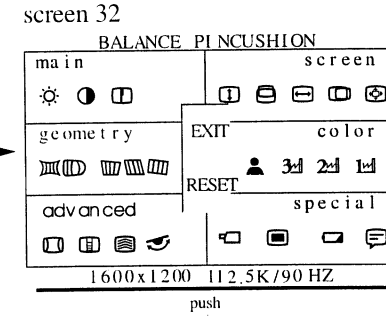
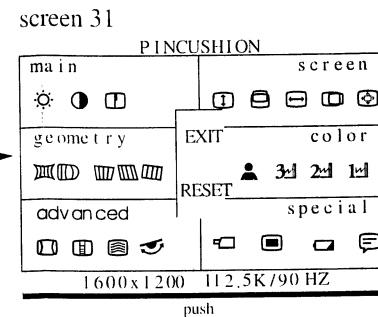
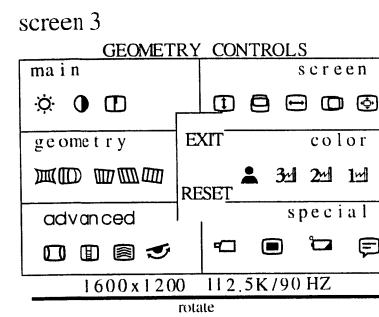
# Quick Reference for OSD Adjustment

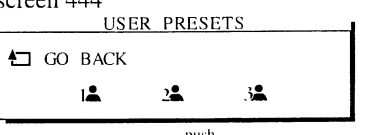
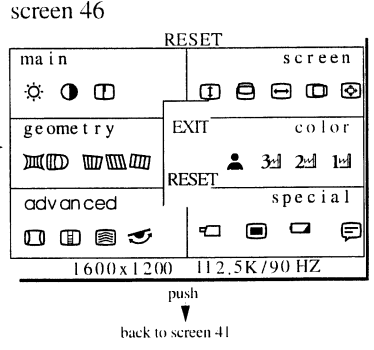
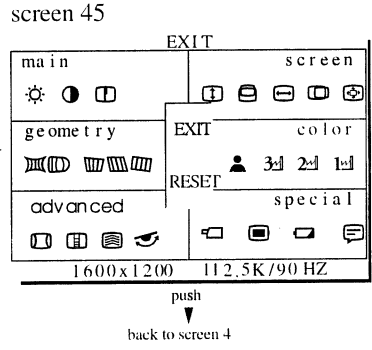
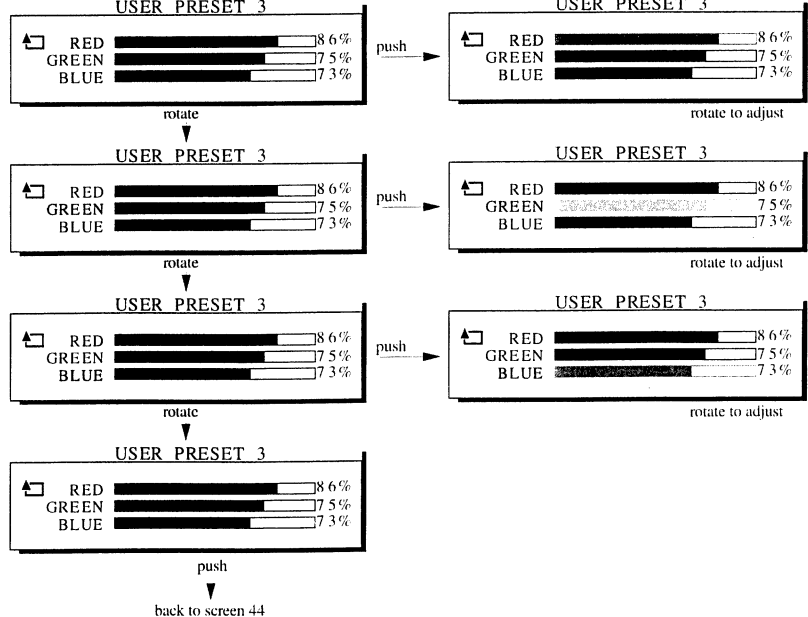
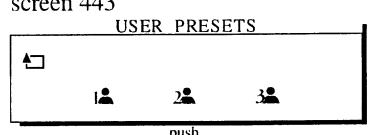
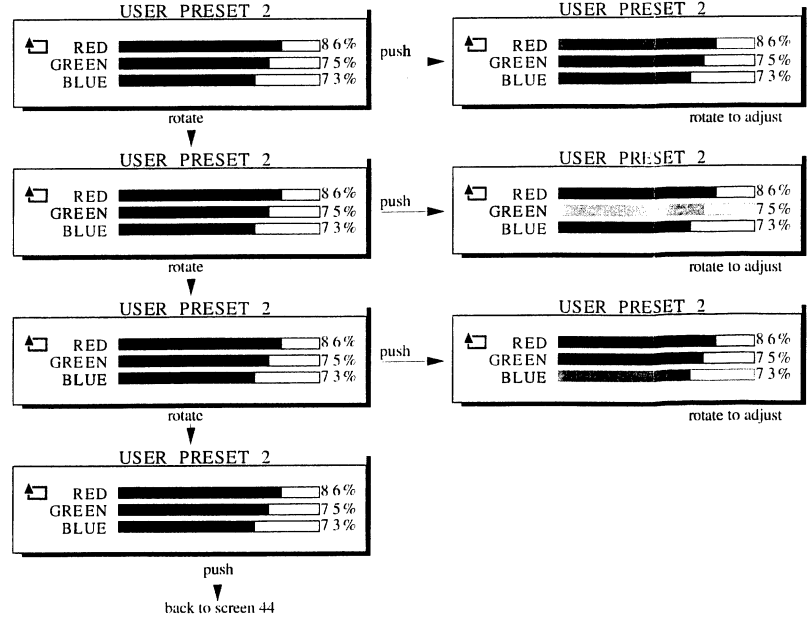
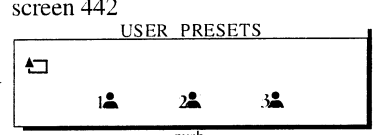
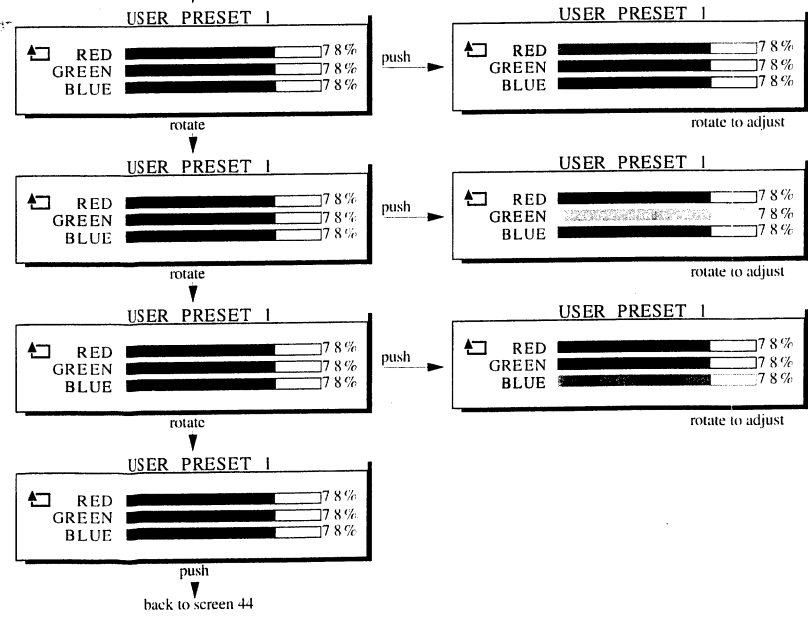
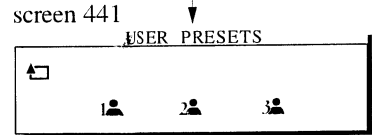
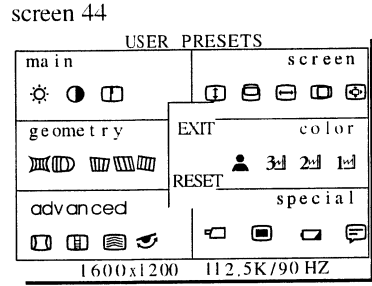
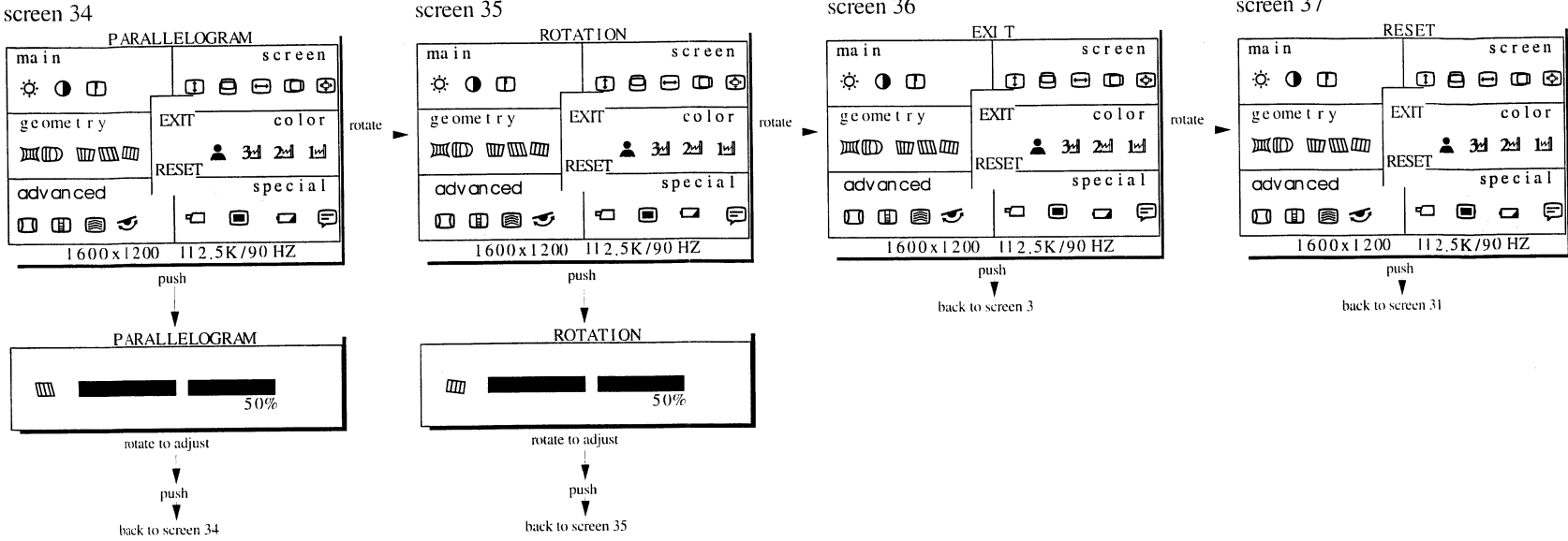


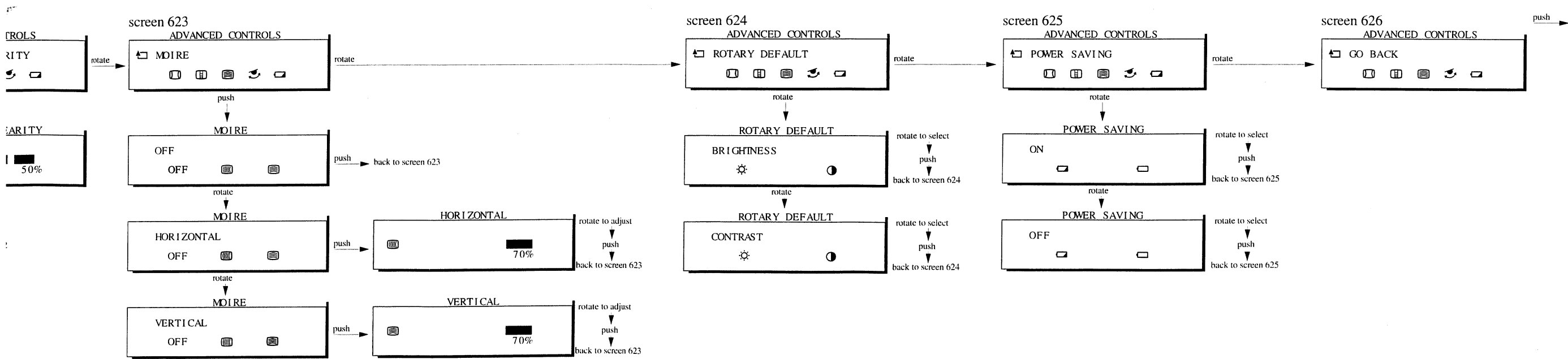
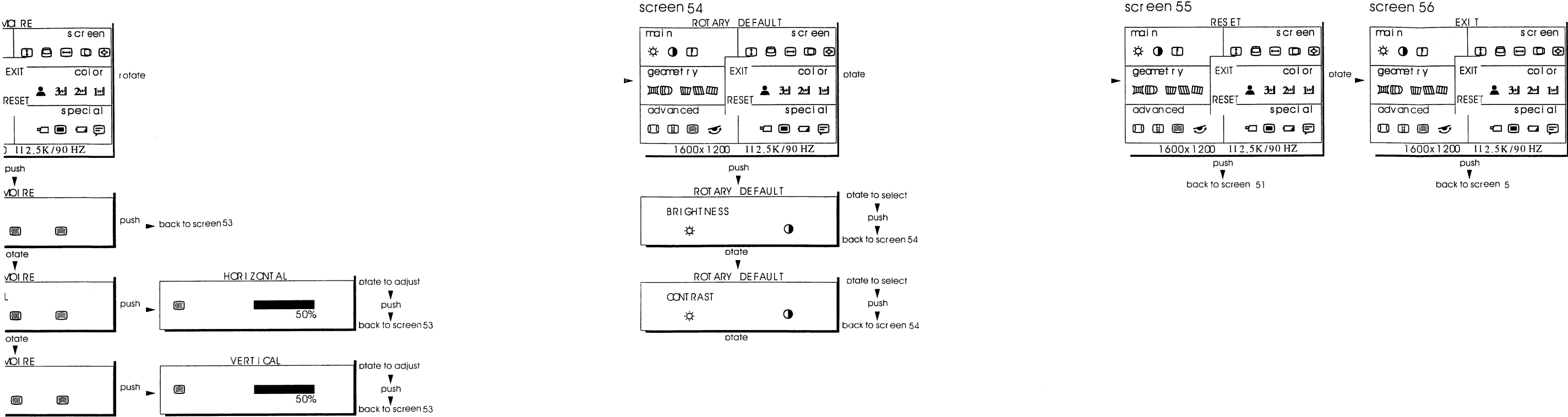




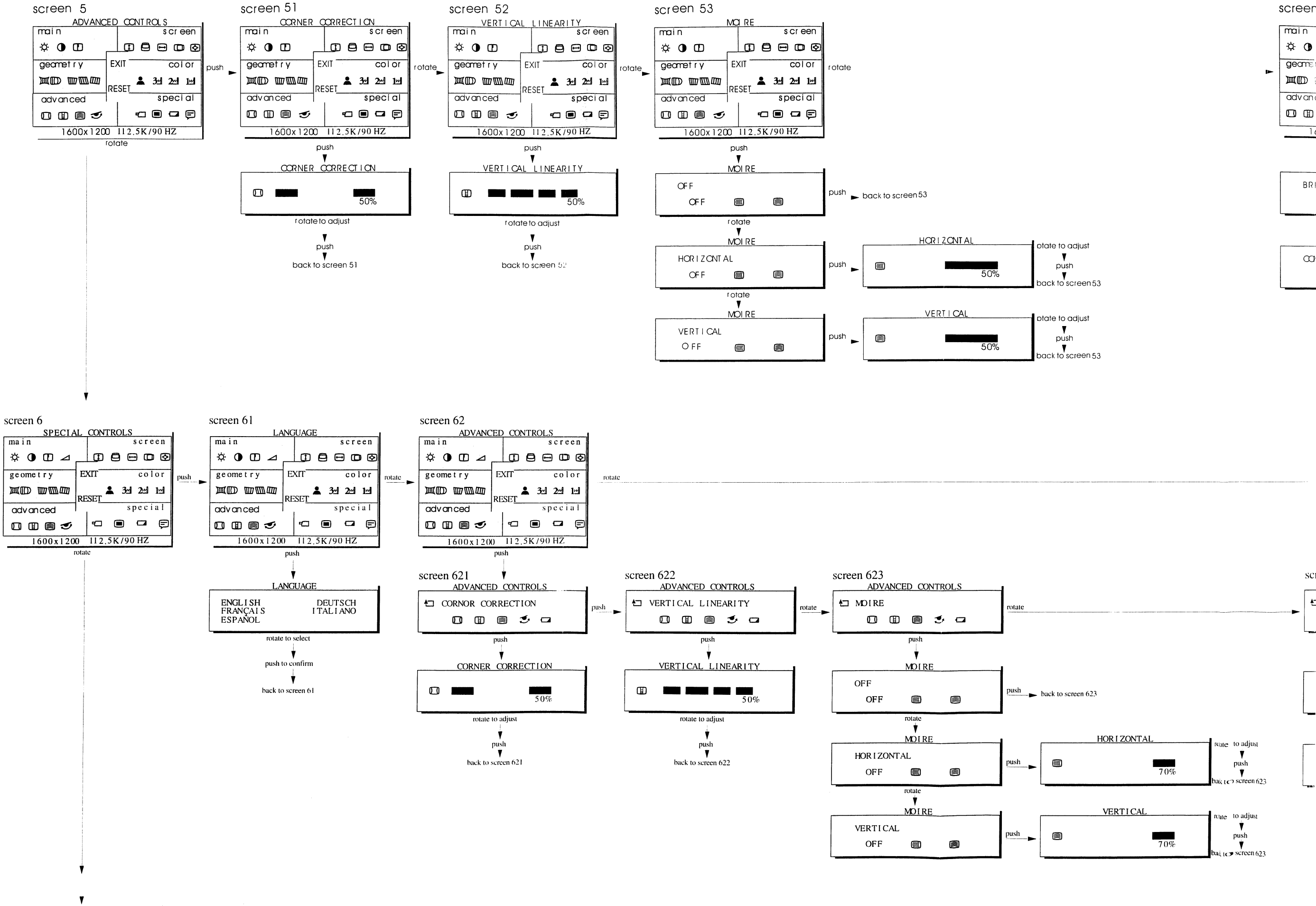
# Quick Reference for OSD Adjustment (Continued)



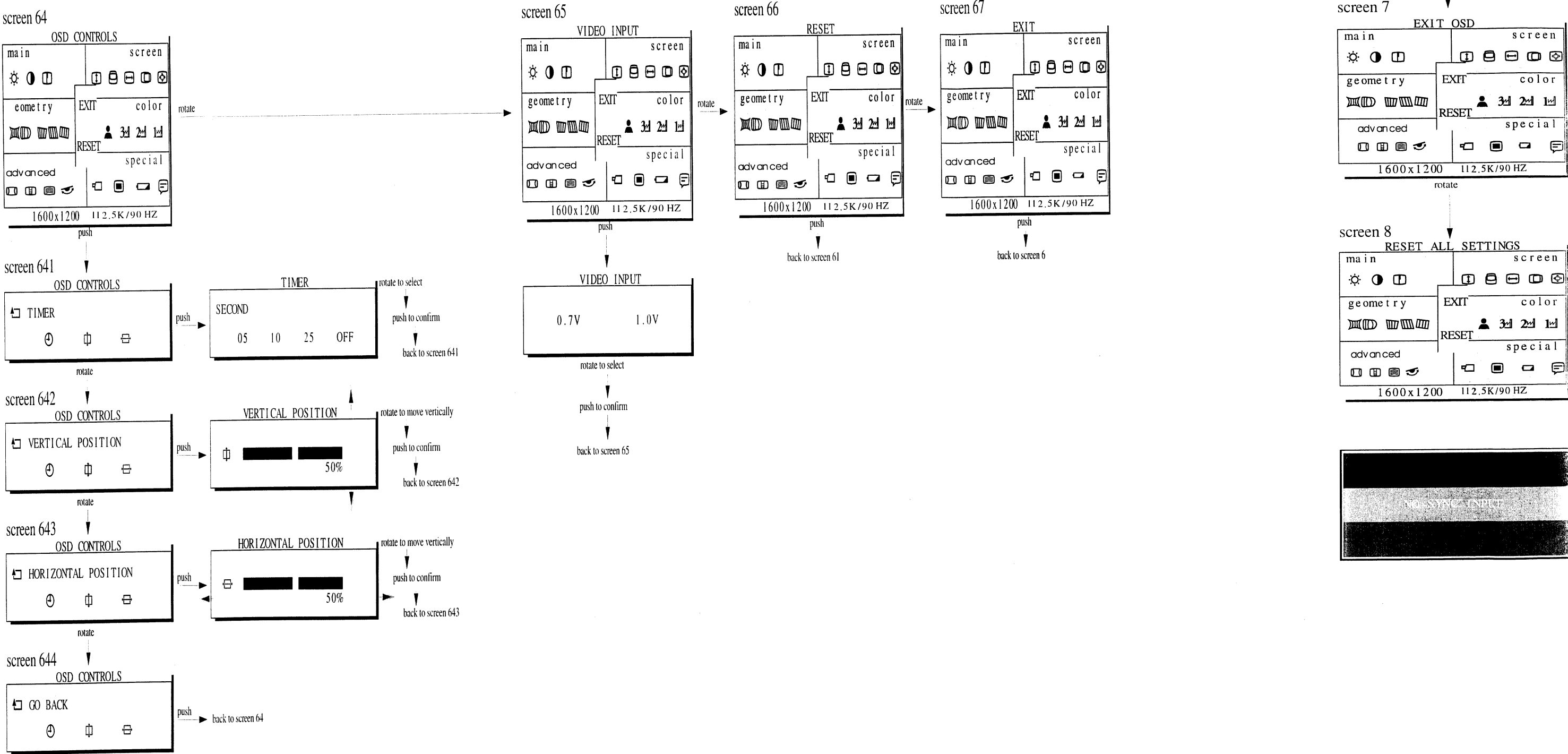


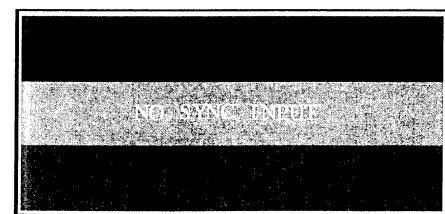
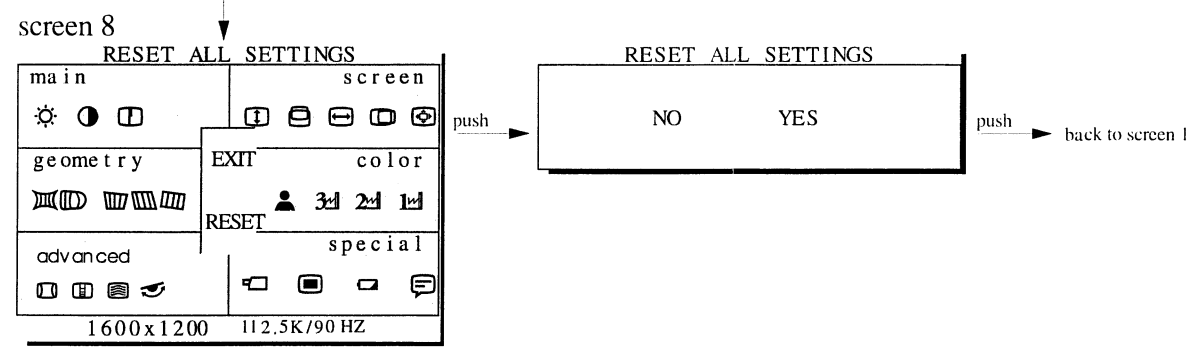
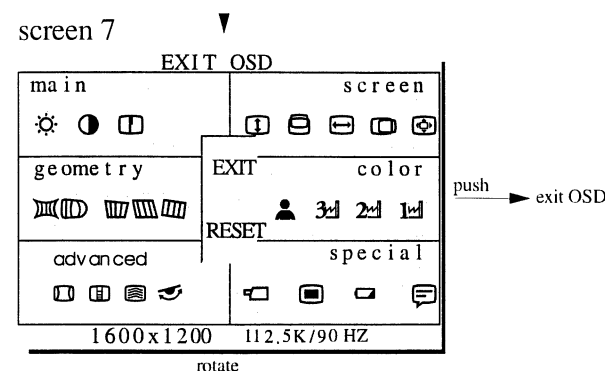
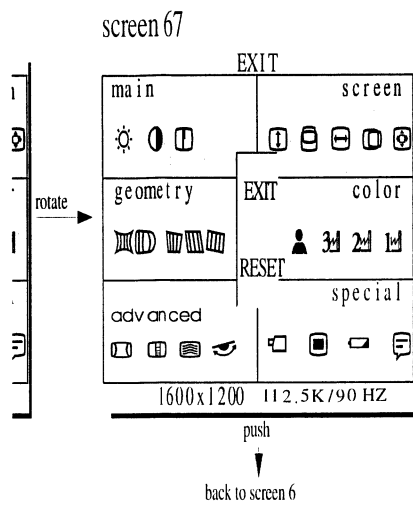


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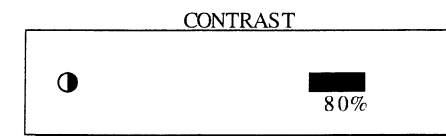
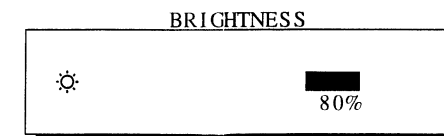


Quick Reference for OSD Adjustment (Continued)





"When rotary default setting selected"



# Mechanical Adjustments

# Wiring diagram

## 0. Location of the panel

- 0.1 Main panel (1156)
- 0.2 Video panel (1157)
- 0.3 Terminal panel (1159)
- 0.4 USB panel (1160) - optional
- 0.5 Encoder panel (1162)
- 0.6 Power switch panel (1163)

## 1. General

To be able to perform measurements and repairs on the circuit boards, the monitor should be placed in **Service Position (Fig. 3.1)** first:

*How to remove the back cover of monitor:*

There are 4 screws [2 screws are at the rear of the monitor, the other two screws are on the bottom of the monitor] to fix the front cabinet and back cover of the monitor.

Step 1: Remove the "cable cover" as shown in Fig. 3.2.

Step 2: Remove 2 screws (rear view) as shown in Fig. 3.3.

Step 3: Turn the set to remove the other 2 screws, as shown in Fig. 3.4.

Step 4: Turn the set to its original position.

Step 5: Remove back cover (\* There are two "plastic clips" on the "front cabinet" to hold the "rear cover" as shown in Fig. 3.5).

*Chassis :*

After removing the back cover, you can see the inside the monitor with metal frame and metal shield.

- Remove 26 screws for service position as Fig. 3.6 to Fig. 3.15.

## Video panel :

- After removing the metal frames, remove the metal shielding on rear side of Video panel for measurement.

## Main panel :

After removing the metal frames,

- Disconnect "Video panel"
- Disconnect EHT cable (EHT cap)
- Disconnect 4 pin connector "M1501" (wire of YOKE, on Main panel)
- Disconnect 2 pin connector "M1114" (degaussing coil, on Main panel)
- Disconnect 1 pin connector "M1701" (on Video panel)
- Disconnect 2 pin connector "M1219" (on Main panel)
- Disconnect 9 pin connector "M1217" (on Main panel)
- Disconnect 3 pin connector "M1213" (on Main panel)
- Disconnect 3 pin connector "M1504" (on Main panel)
- Disconnect 2 pin connector "M1218" (on Main panel)
- Disconnect 2 pin connector "M1220" (on Main panel)
- Disconnect 7 pin connector "M1212" (on Main panel)

- To slide out Main panel.

- Remove 2 screws as shown in Fig. 3.14, then push the clips to the right as shown in Fig. 3.13, to separate the bottom plate.

- Remove the plastic frame as shown in Fig. 3.15.

- Remove the "Rotary panel" "Earphone panel" from

Front cabinet and place it on the table as shown in Fig. 3.1.

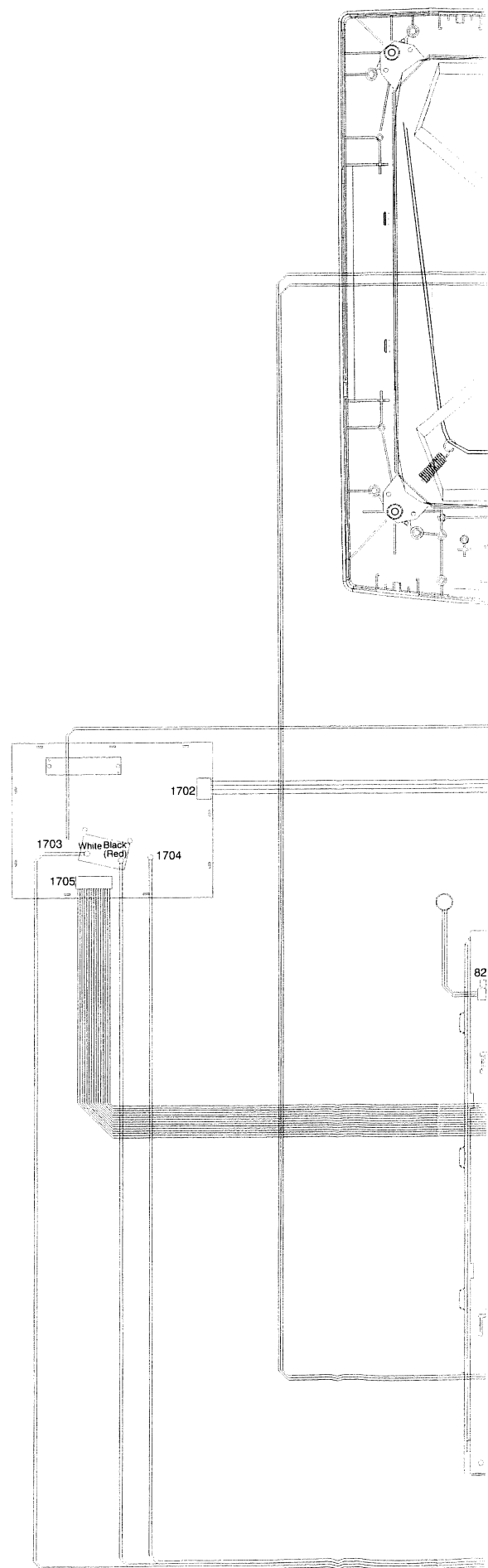
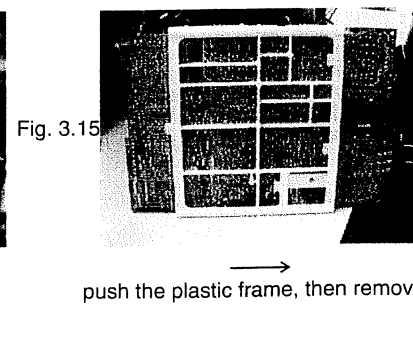
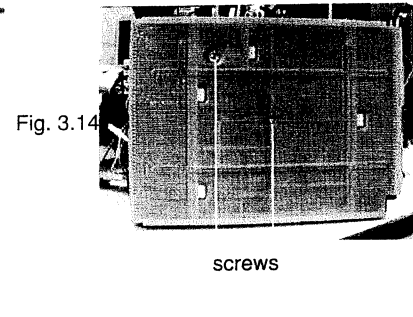
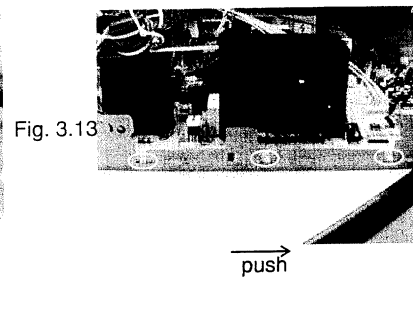
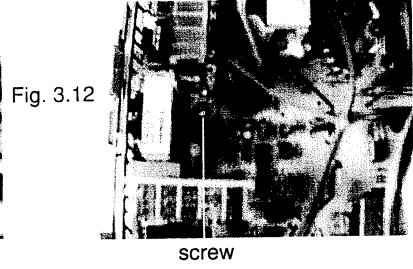
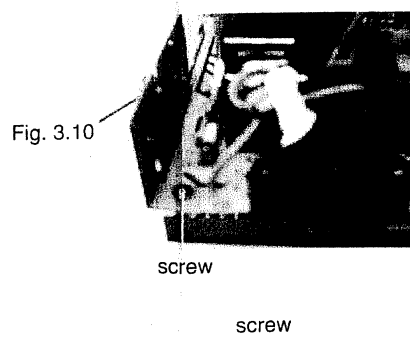
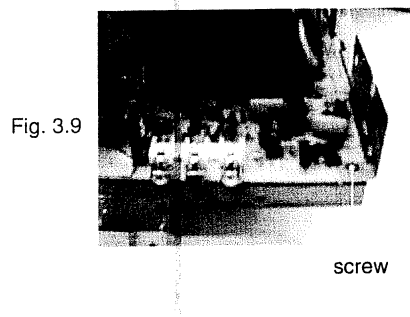
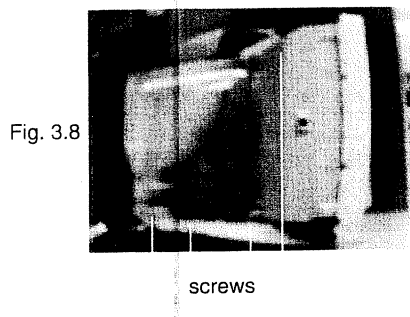
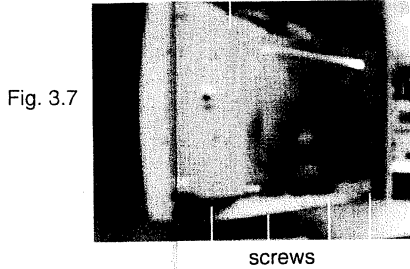
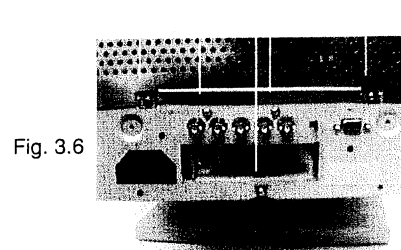
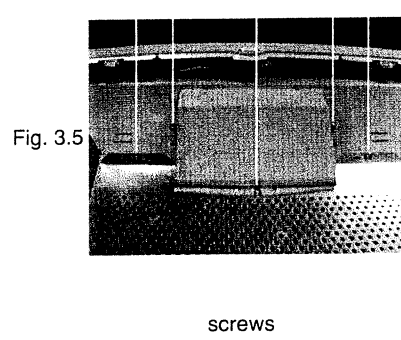
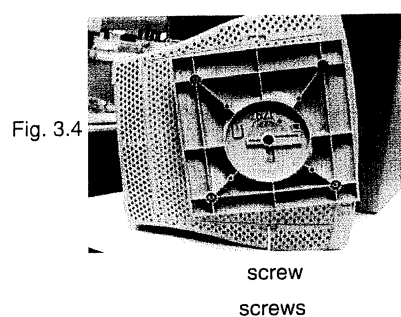
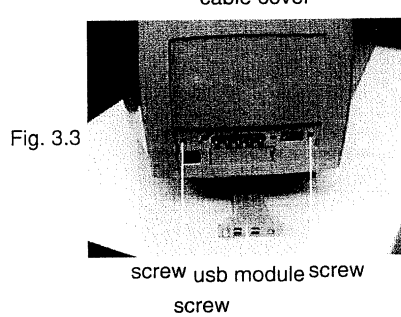
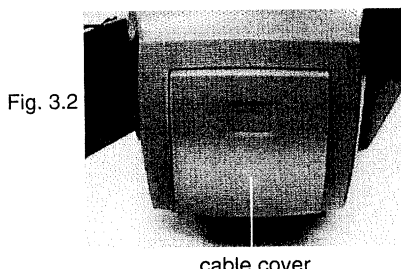
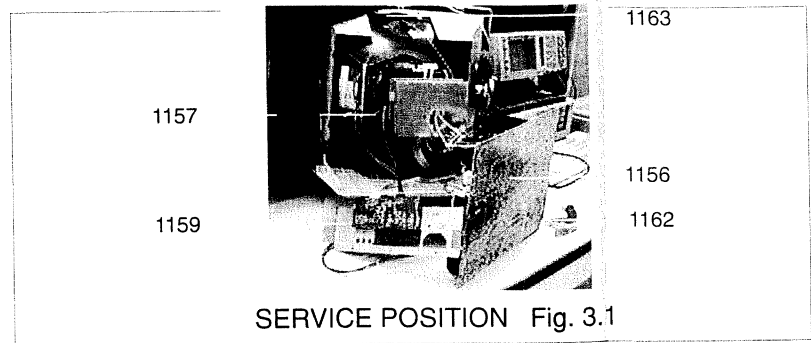
- Connect all the connectors and panels for service position.

## Service position :

Place monitor in service position as shown in Fig. 3.1 through Fig. 3.15.

## 2. Repair instructions

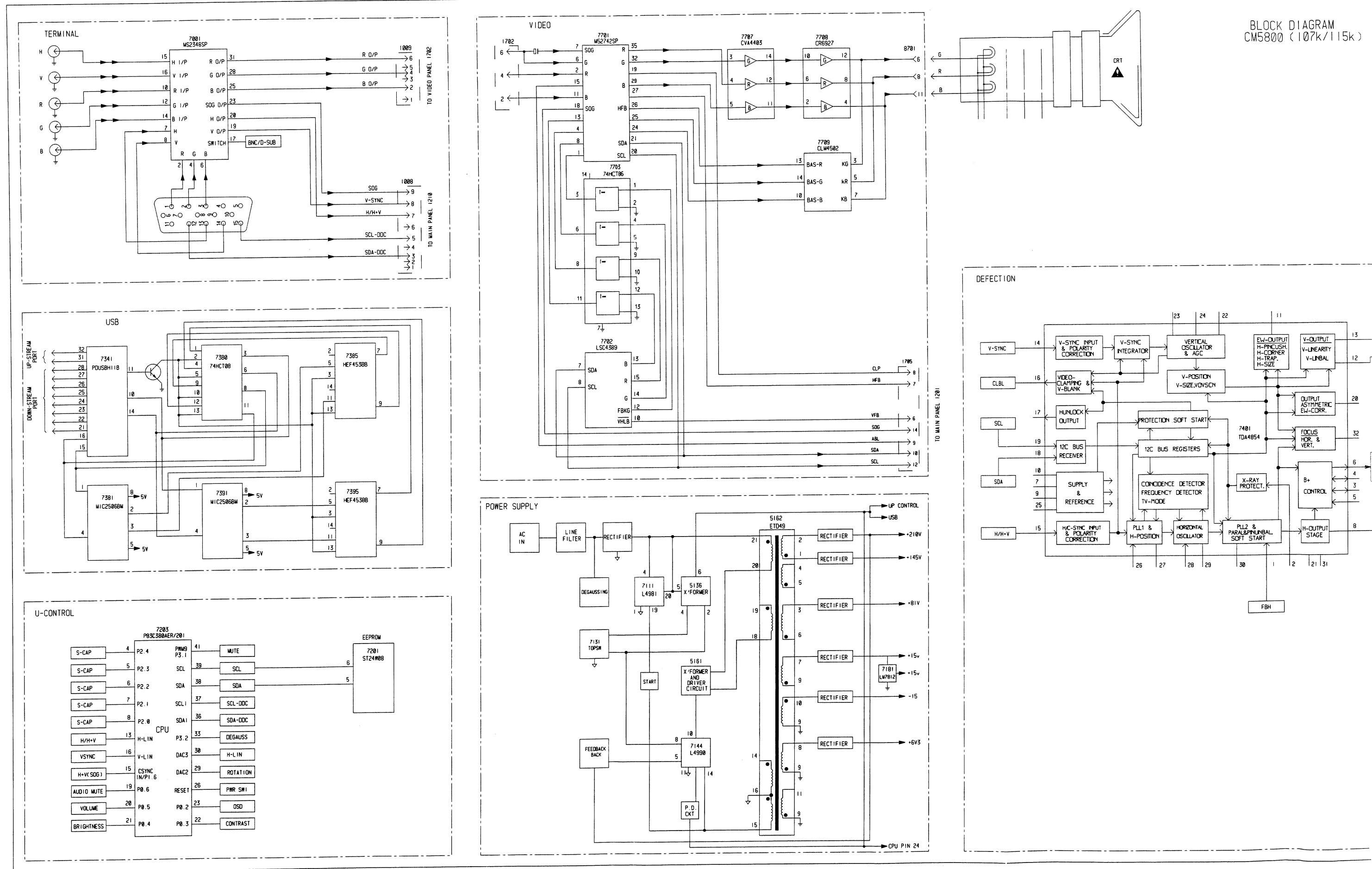
After the service position is obtained, all the panel's copper trace sides may be accessed.





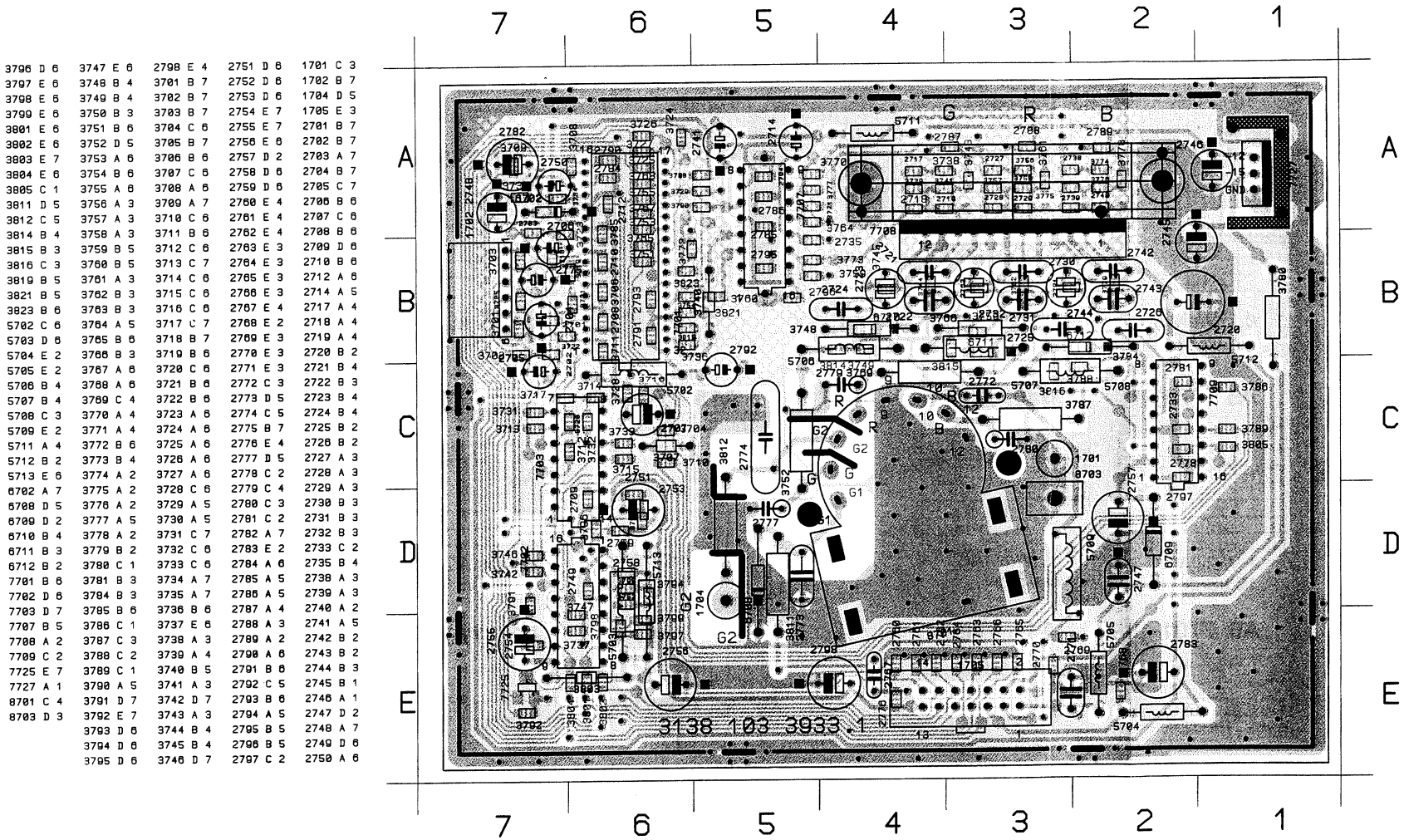


## Block Diagram

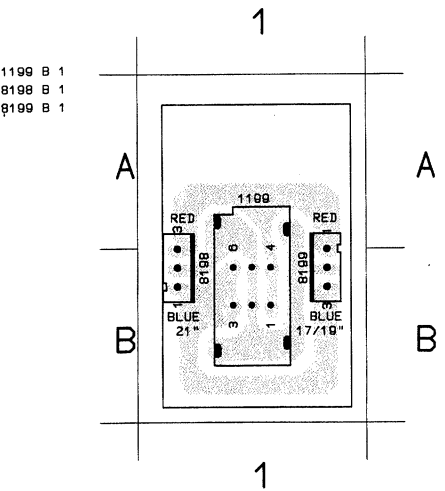




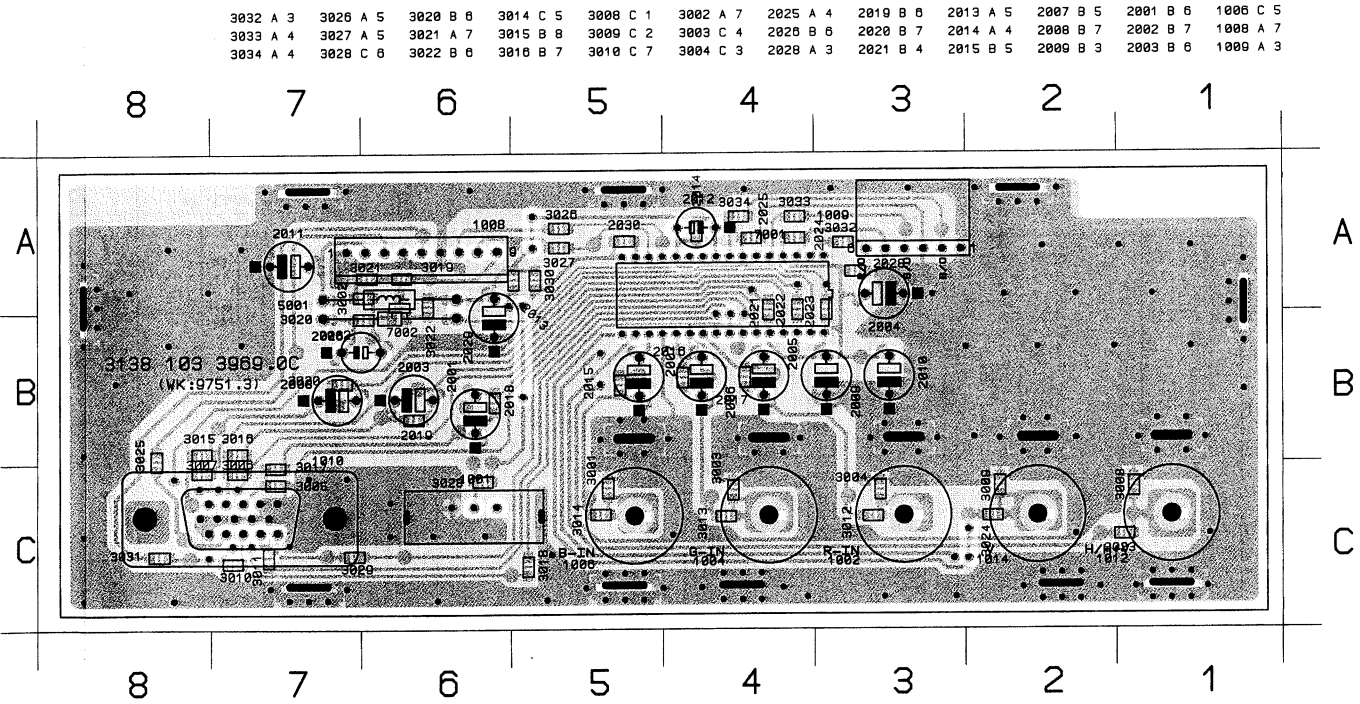
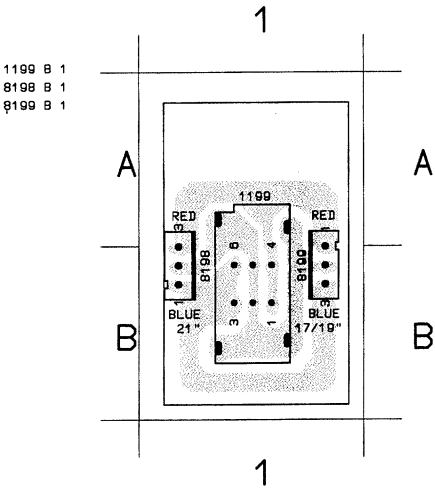
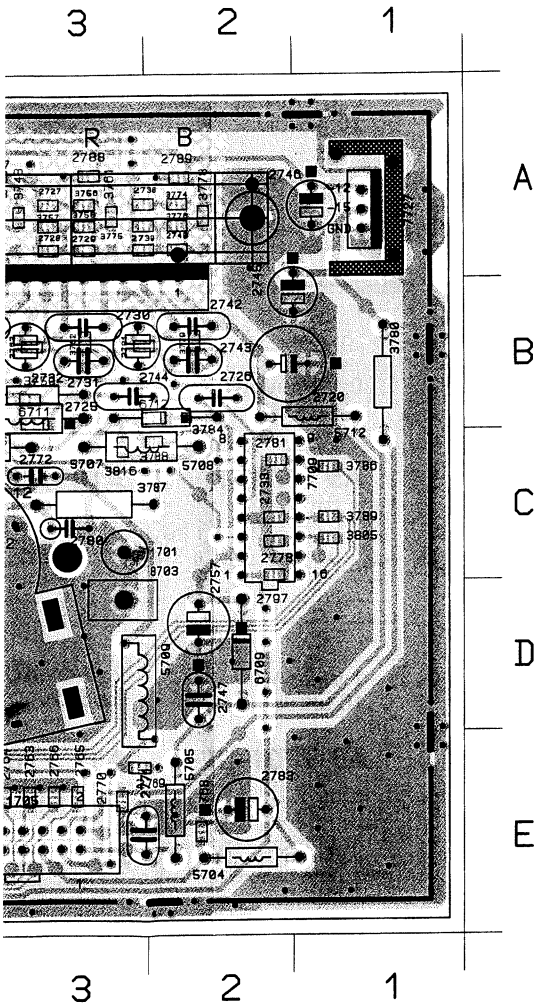
Video Panel C.B.A. (A)



Power Switch Panel C.B.A. (G)

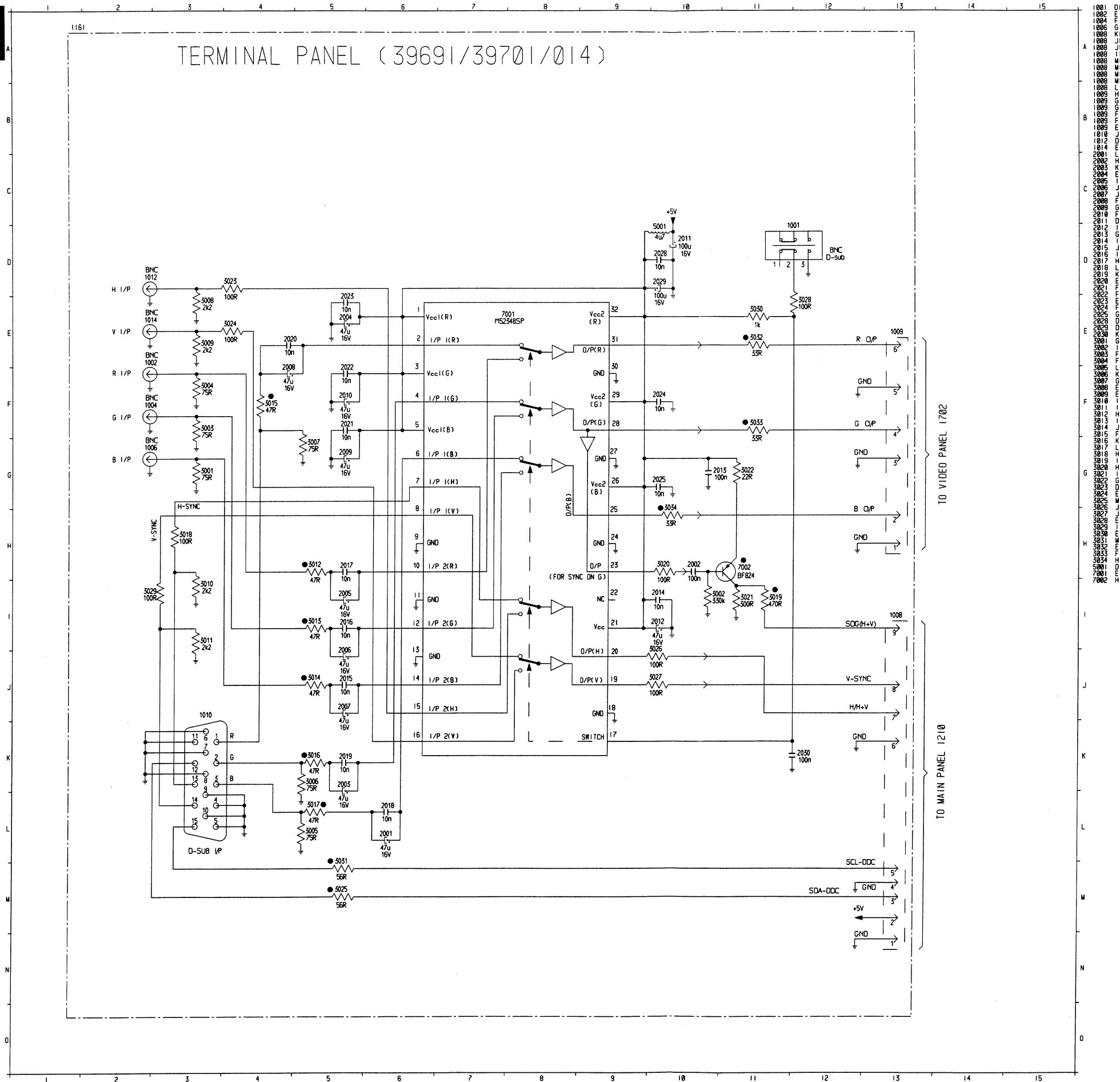


Power Switch Panel C.B.A. (G)

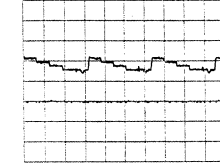


# Terminal Schematic Diagram

**A1**

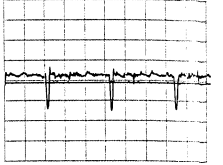


**A1 1702-6**



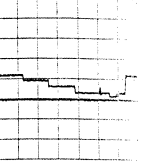
1 V/div AC  
10 uS/div

**A4 7701-4**



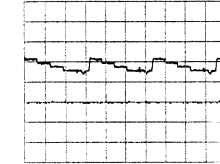
0.1 V/div AC  
10 uS/div

**A7 770**



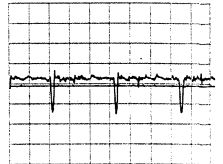
5 V/div AC  
5 uS/div

**A1 1702-4**



1 V/div AC  
10 uS/div

**A4 7701-9**



0.1 V/div AC  
10 uS/div

**A8 770**



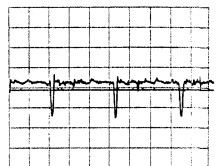
5 V/div AC  
5 mS/div

**A1 1702-2**



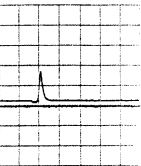
1 V/div AC  
10 uS/div

**A4 7701-13**



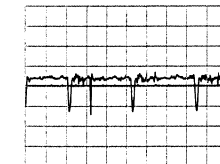
0.1 V/div AC  
10 uS/div

**A9 770**



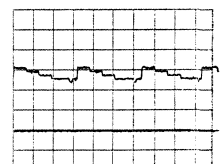
2 V/div AC  
5 uS/div

**A2 7701-1**



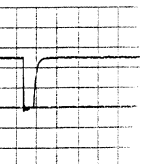
0.1 V/div AC  
10 uS/div

**A5 7701-7**



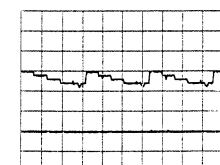
1 V/div AC  
10 uS/div

**A10 77**



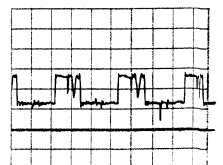
2 V/div AC  
5 uS/div

**A3 7701-2**



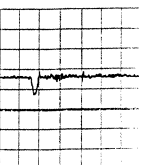
1 V/div AC  
10 uS/div

**A6 7701-18**



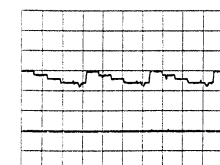
0.2 V/div AC  
10 uS/div

**A11 77**



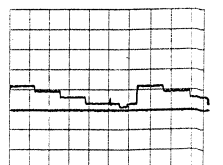
0.2 V/div AC  
5 uS/div

**A3 7701-6**



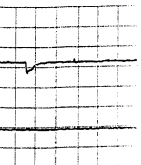
1 V/div AC  
10 uS/div

**A7 7701-35**



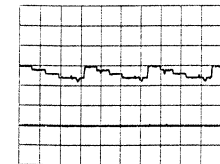
5 V/div AC  
5 uS/div

**A12 77**



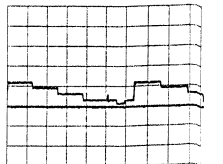
0.5 V/div AC  
5 uS/div

**A3 7701-11**



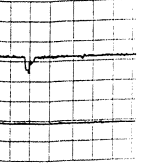
1 V/div AC  
10 uS/div

**A7 7701-32**

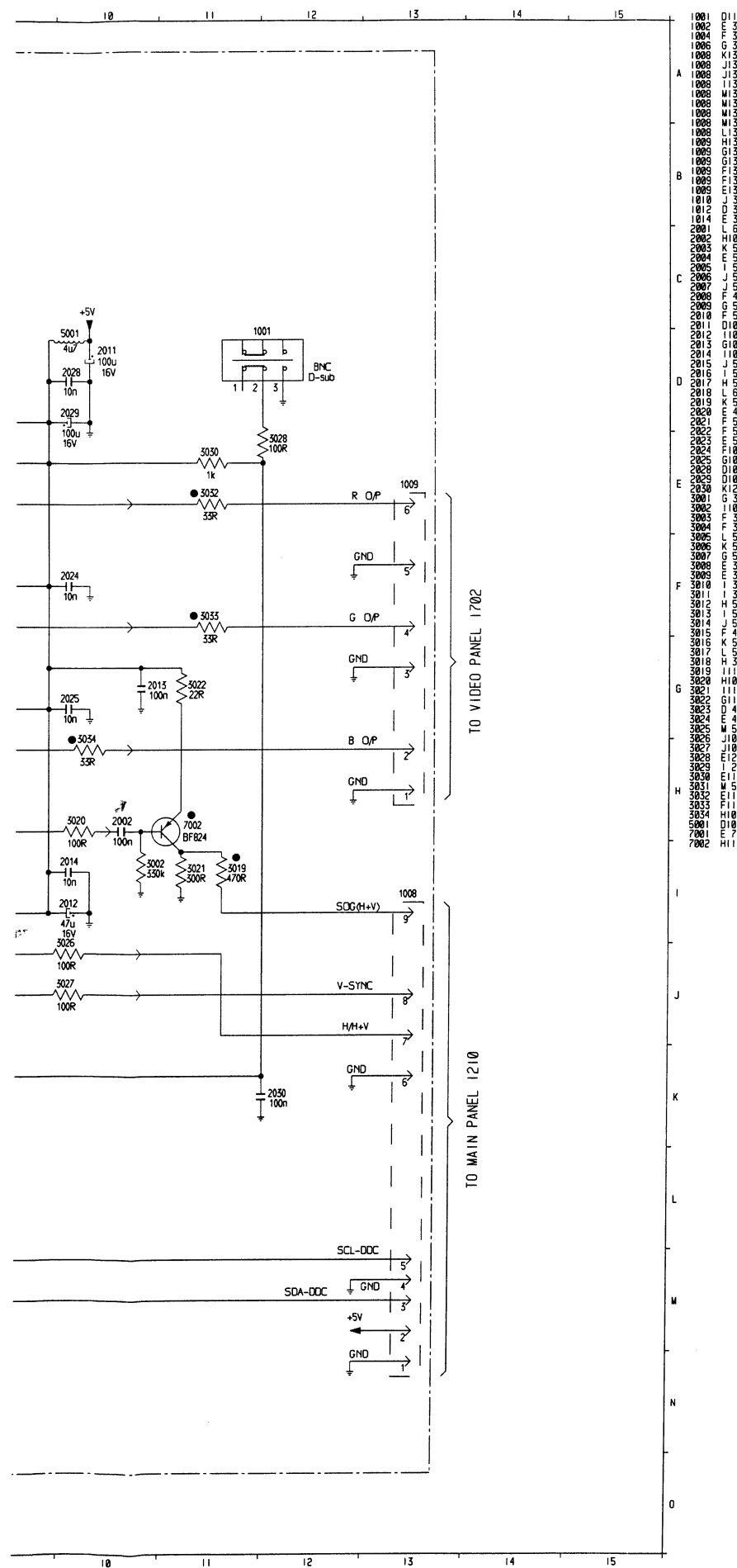


5 V/div AC  
5 uS/div

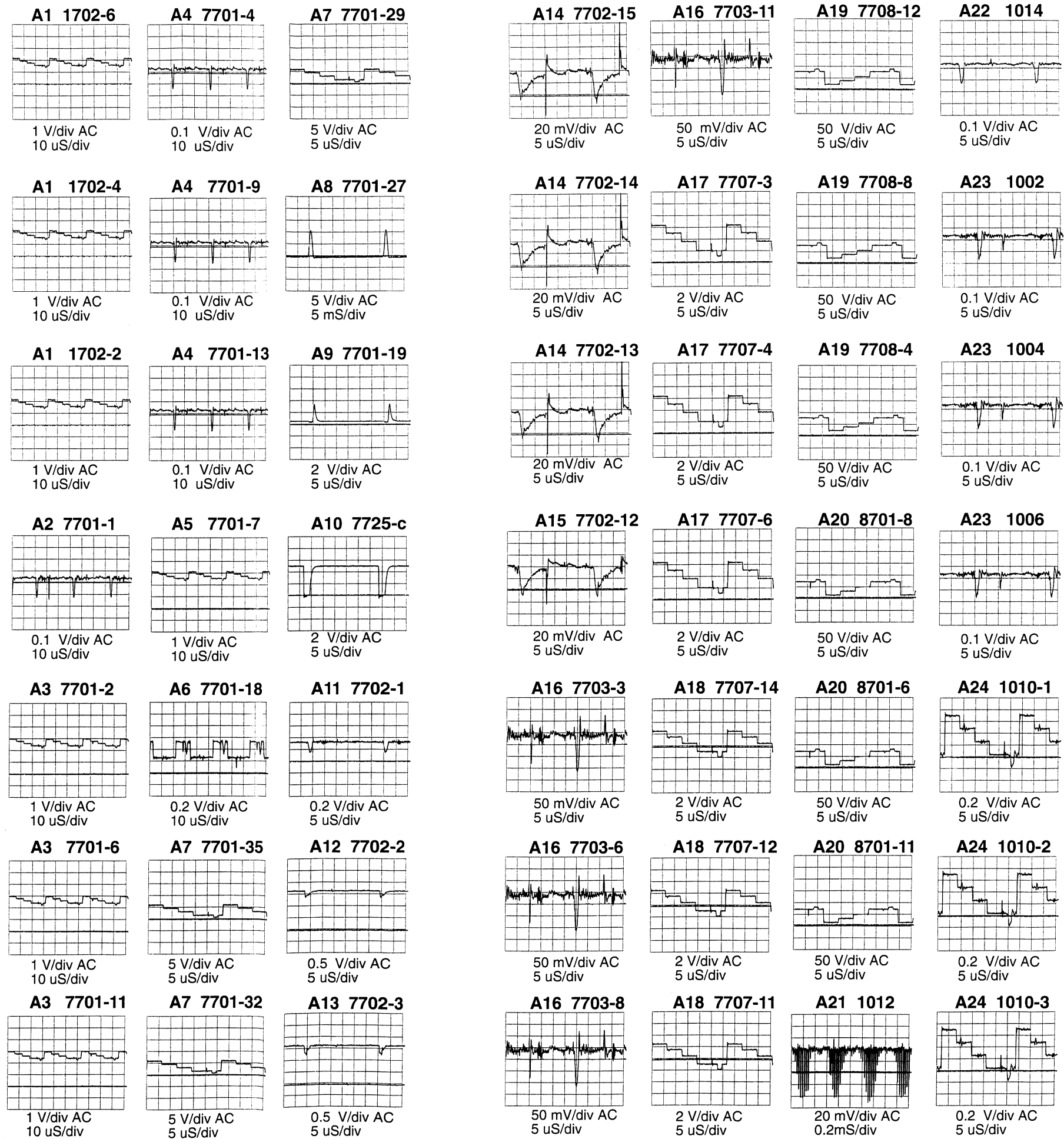
**A13 77**



0.5 V/div AC  
5 uS/div

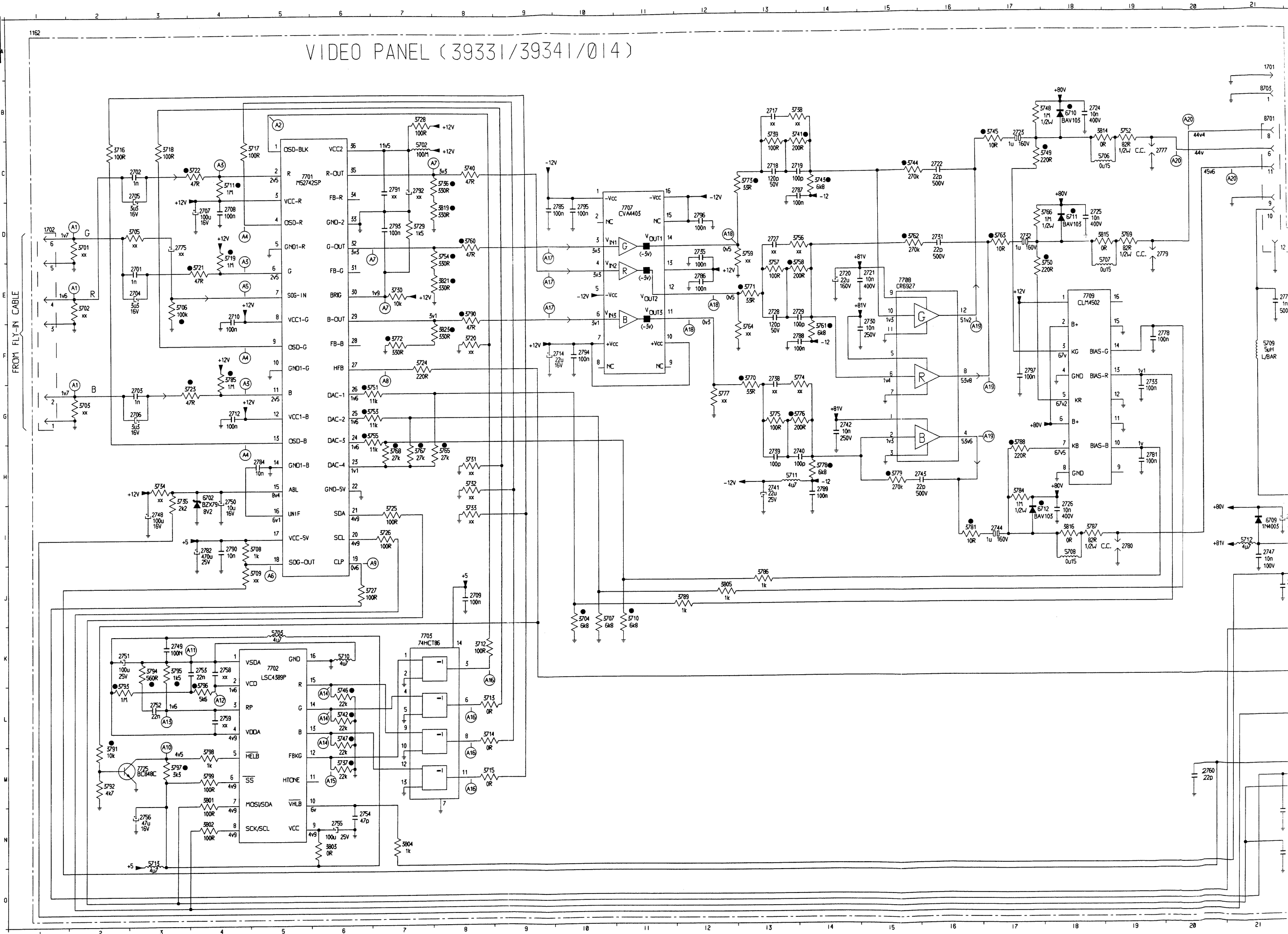


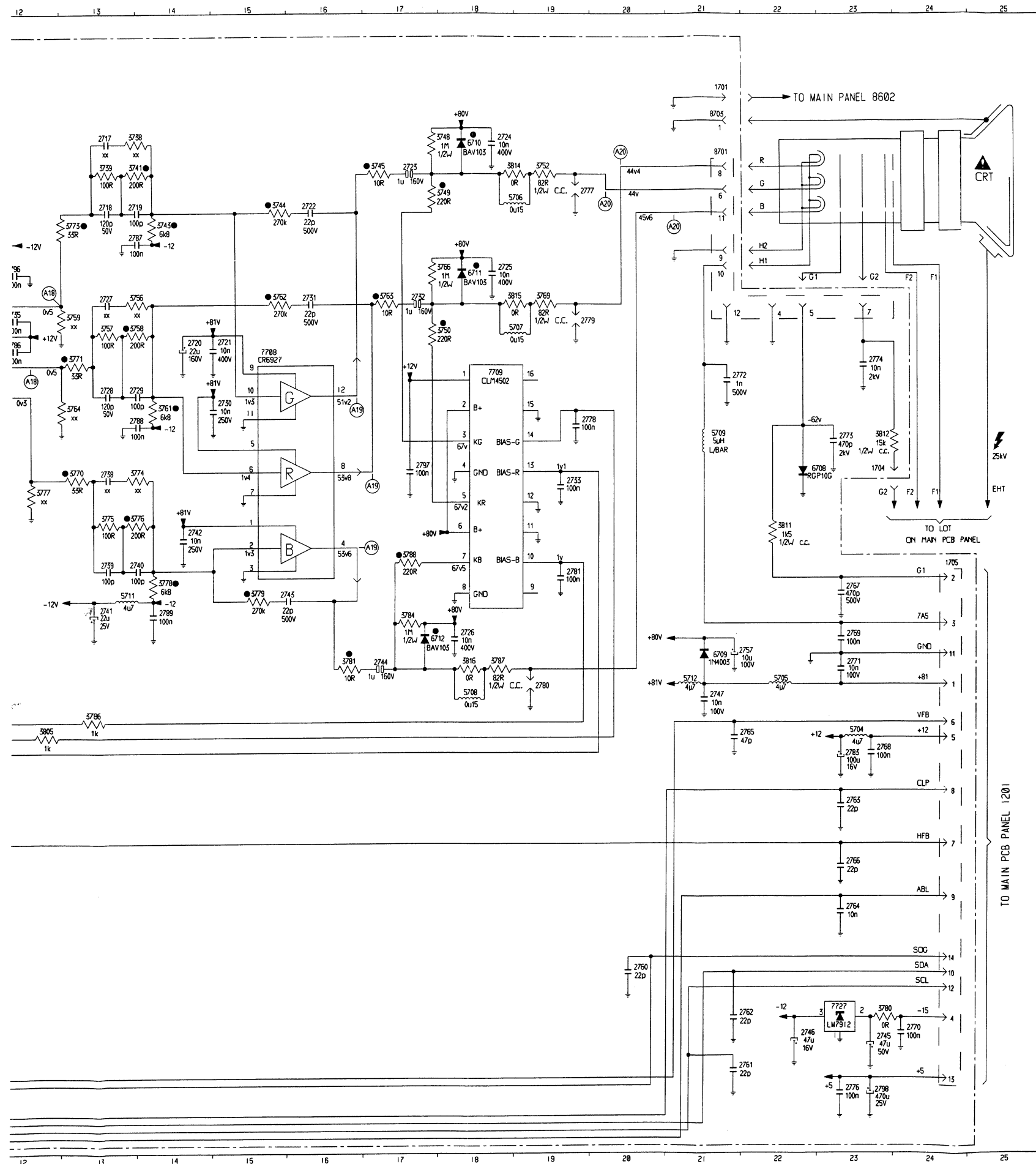
## Waveforms



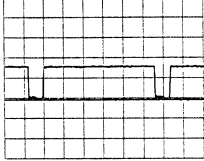


# A2

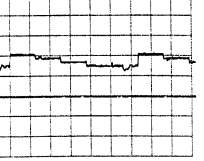




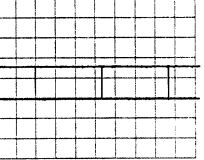
A25 1010-13

2 V/div AC  
5 uS/div

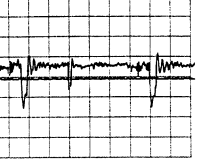
A30 7001-18

1 V/div AC  
5 uS/div

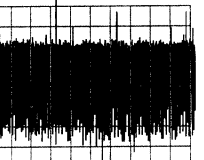
A26 1010-14

2 V/div AC  
5 mS/div

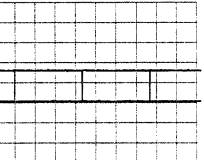
A31 7001-17

0.1 V/div AC  
5 uS/div

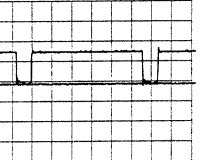
A27 7001-24

20 mV/div AC  
5 mS/div

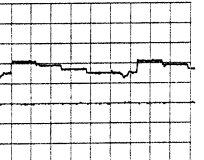
A32 7001-14

2 V/div AC  
5 mS/div

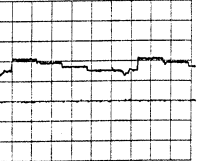
A28 7001-22

2 V/div AC  
5 uS/div

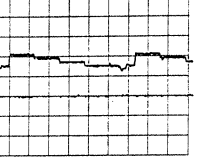
A29 7001-21

1 V/div AC  
5 uS/div

A29 7001-19

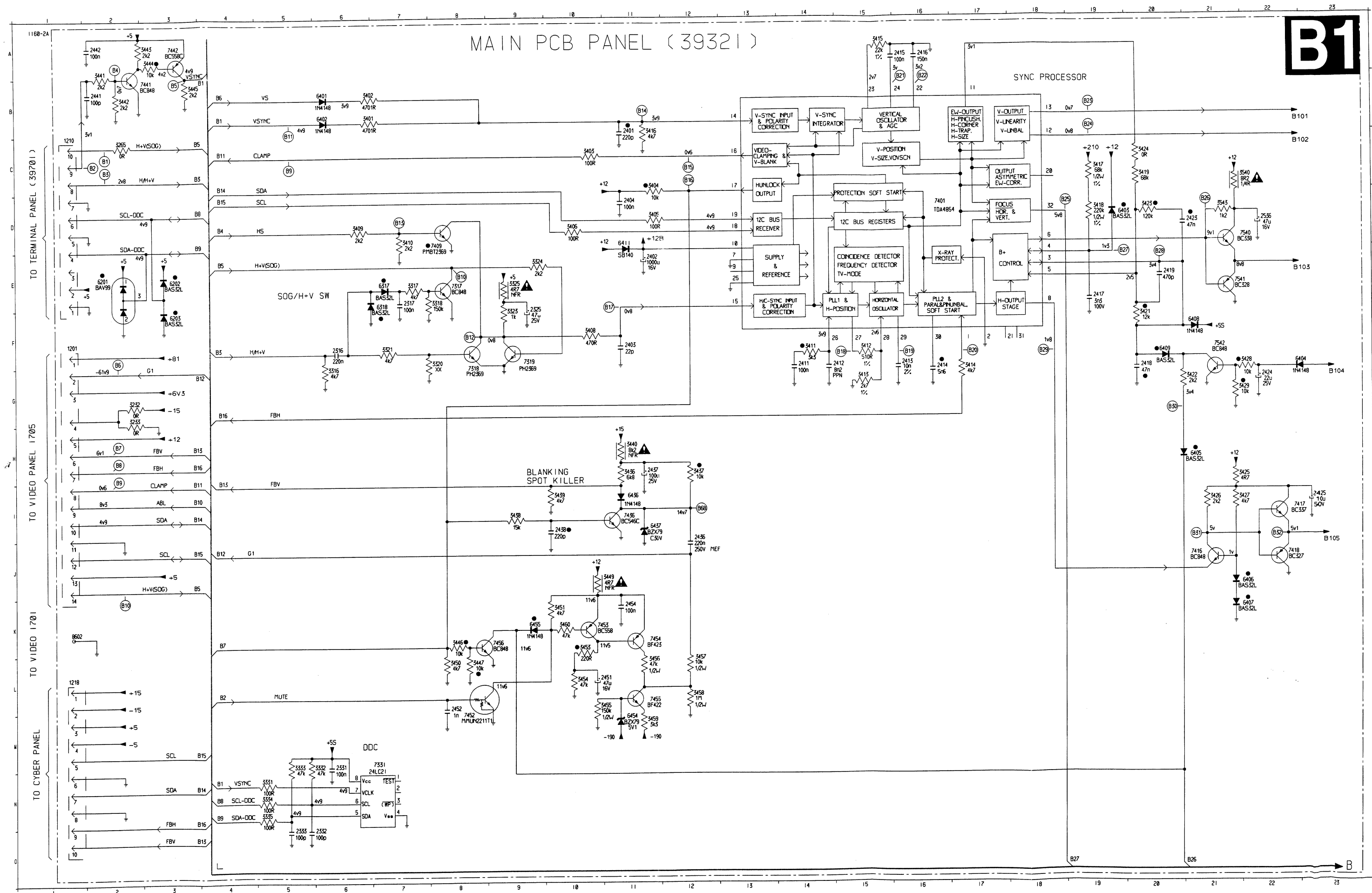
1 V/div AC  
5 uS/div

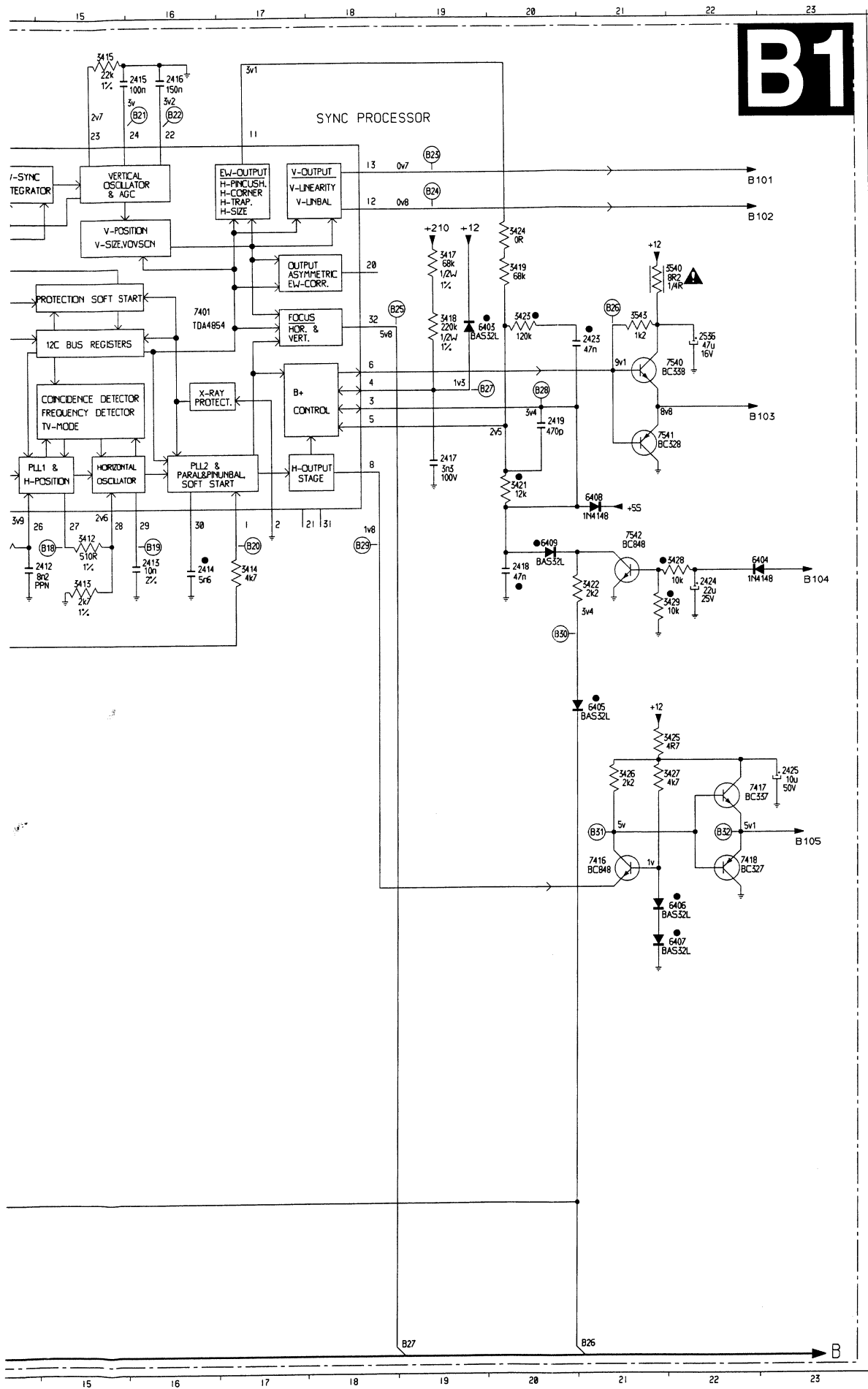
A29 7001-15

1 V/div AC  
5 uS/div

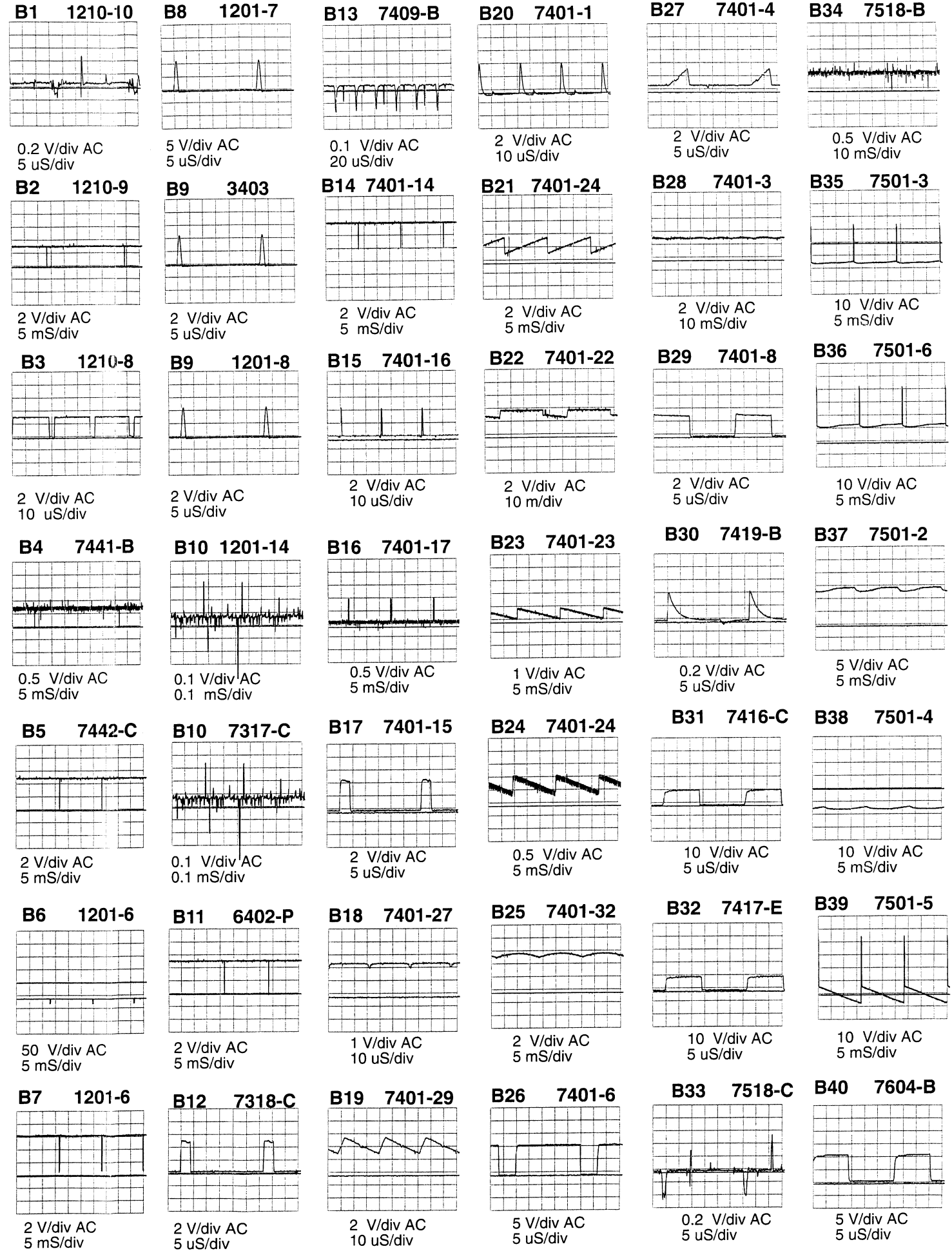


## Deflection

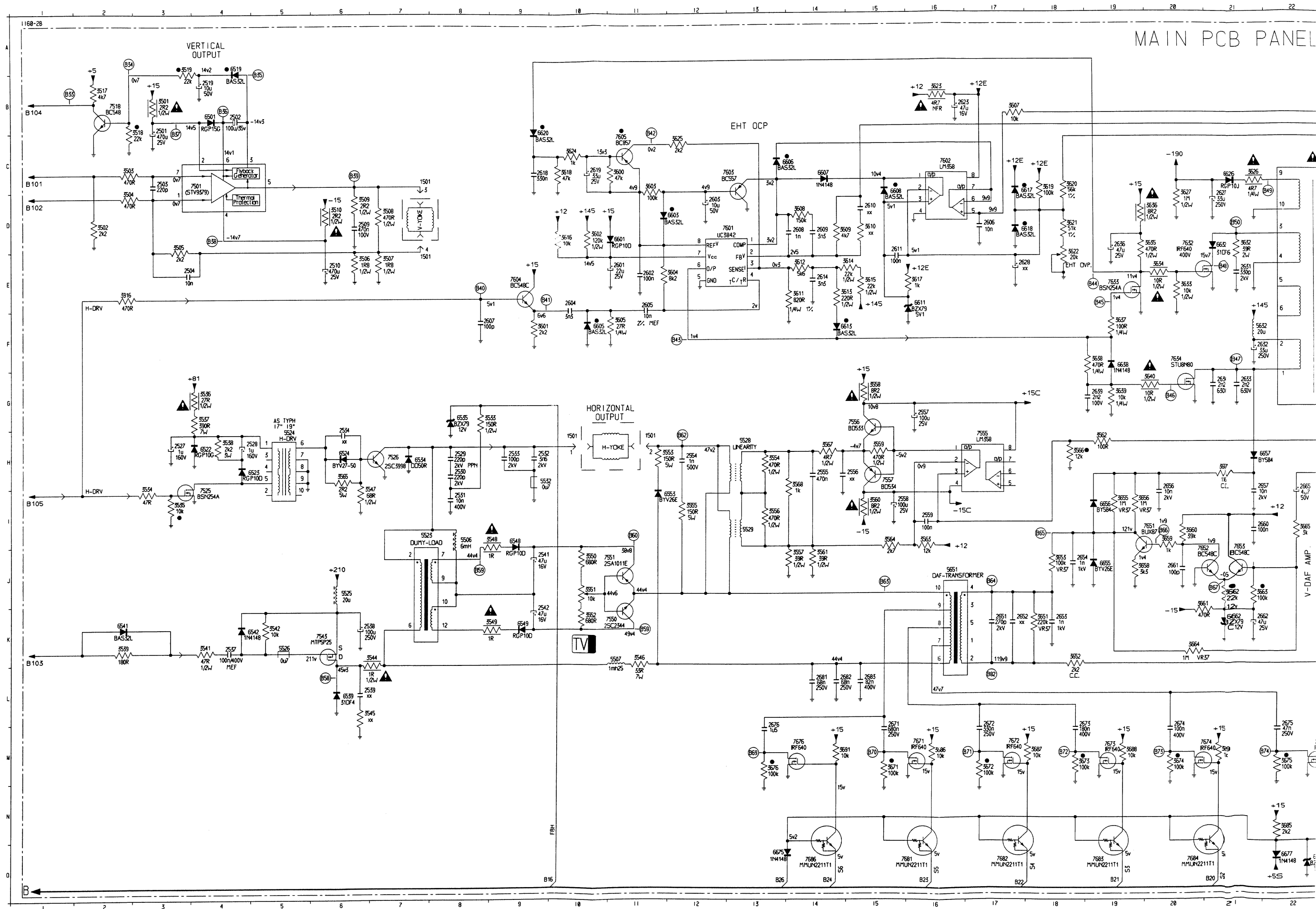




## Deflection

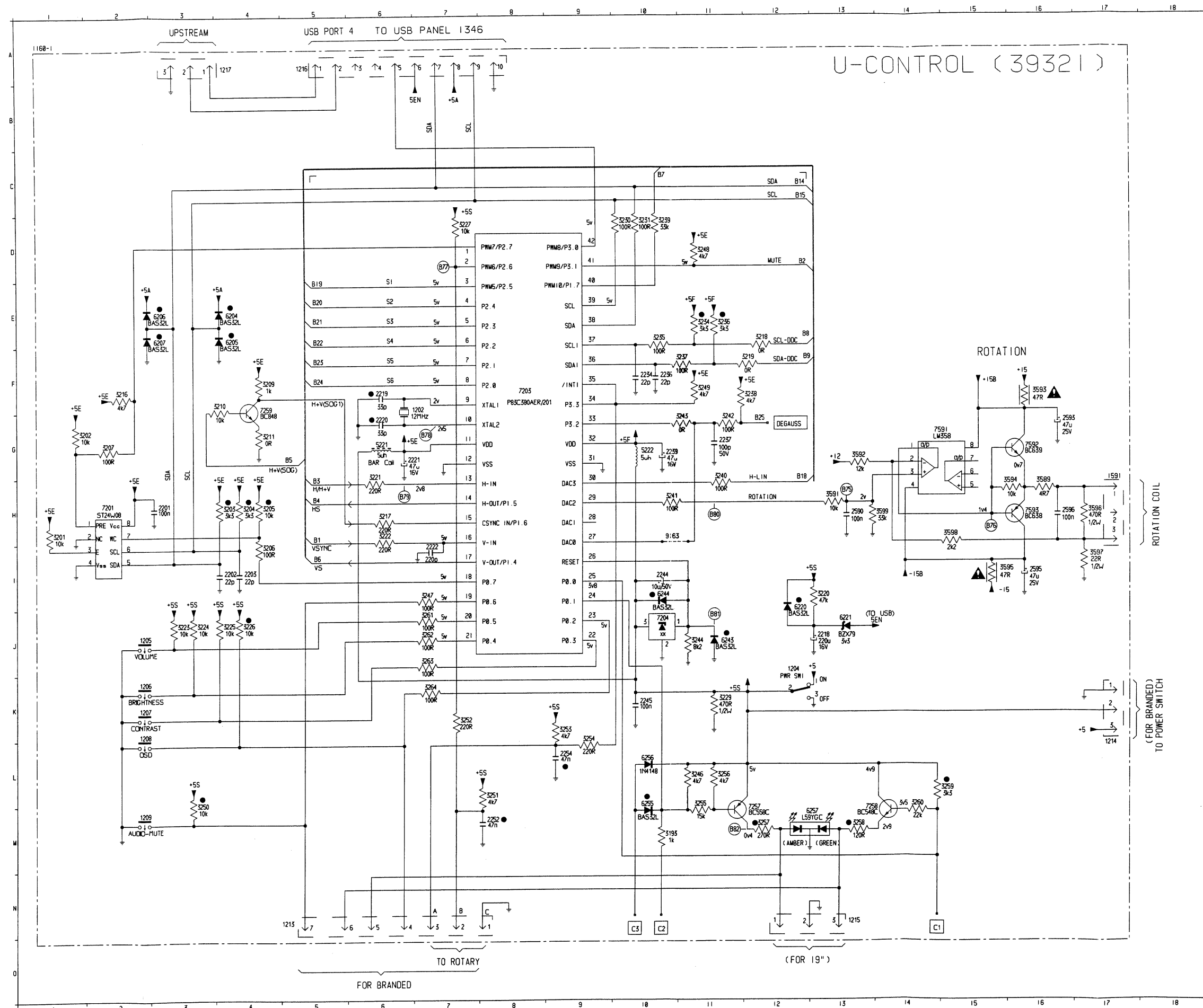


## Deflection

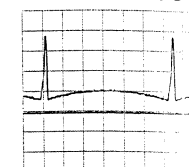




# B3

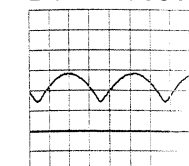


**B62 3553**



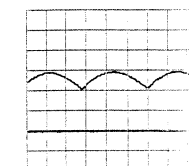
50 V/div AC  
5  $\mu$ S/div

**B63 5651**



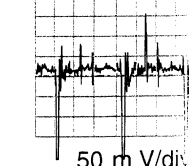
20 V/div AC  
10  $\mu$ S/div

B64 565



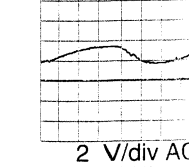
50 V/div A  
10  $\mu$ S/div

B65 765

[illegible]

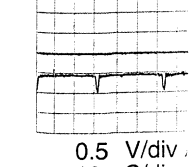
10 uS/div

**B66 765**

[illegible]

5  $\mu$ S/div

**B67 7652**

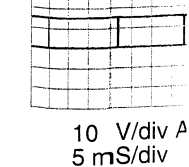



10 uS/div

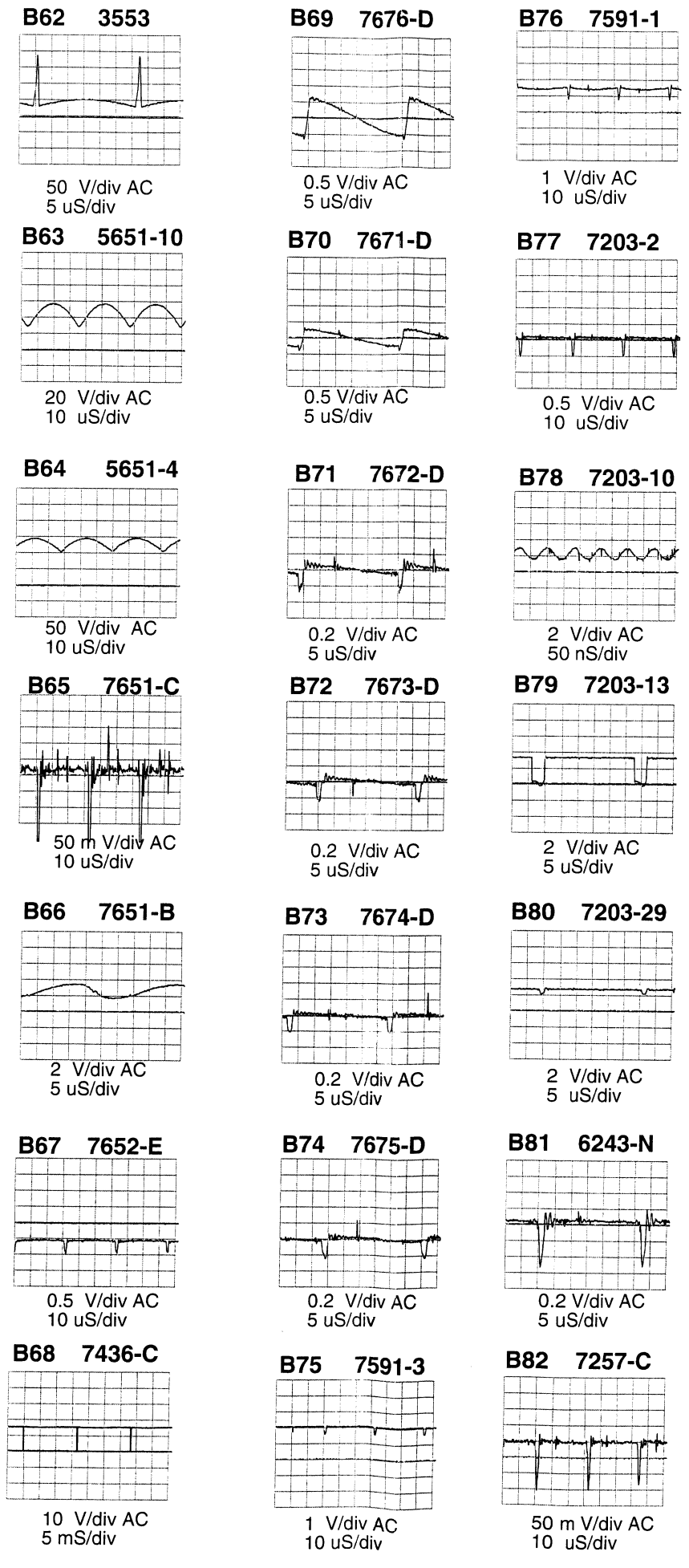
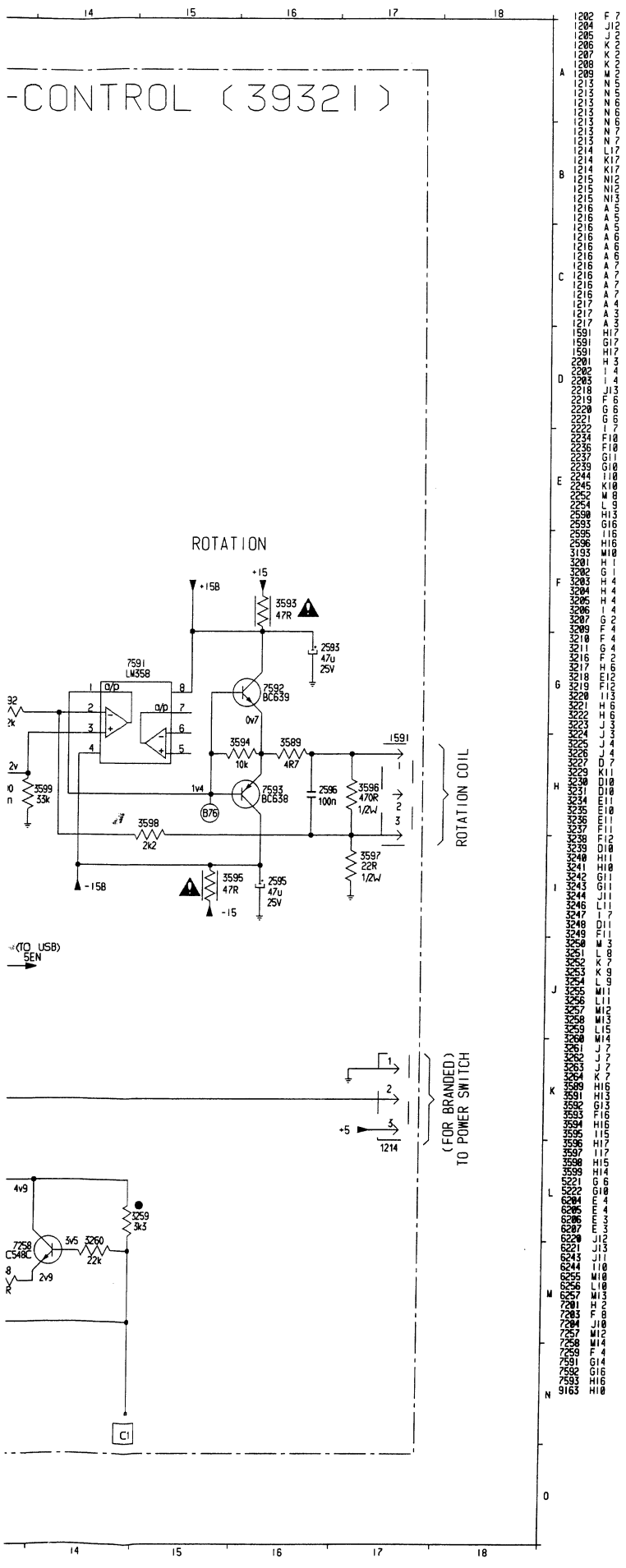
**B68 7436**

[illegible]

Figure 1 is a 3D plot showing the variation of the normalized maximum stress ( $\sigma_{\max} / \sigma_0$ ) as a function of the normalized length ( $L / \lambda$ ) and the normalized thickness ( $h / \lambda$ ). The plot shows a grid of curves for different values of the normalized thickness ( $h / \lambda$ ) ranging from 0.1 to 0.9. The normalized maximum stress increases with both  $L / \lambda$  and  $h / \lambda$ .

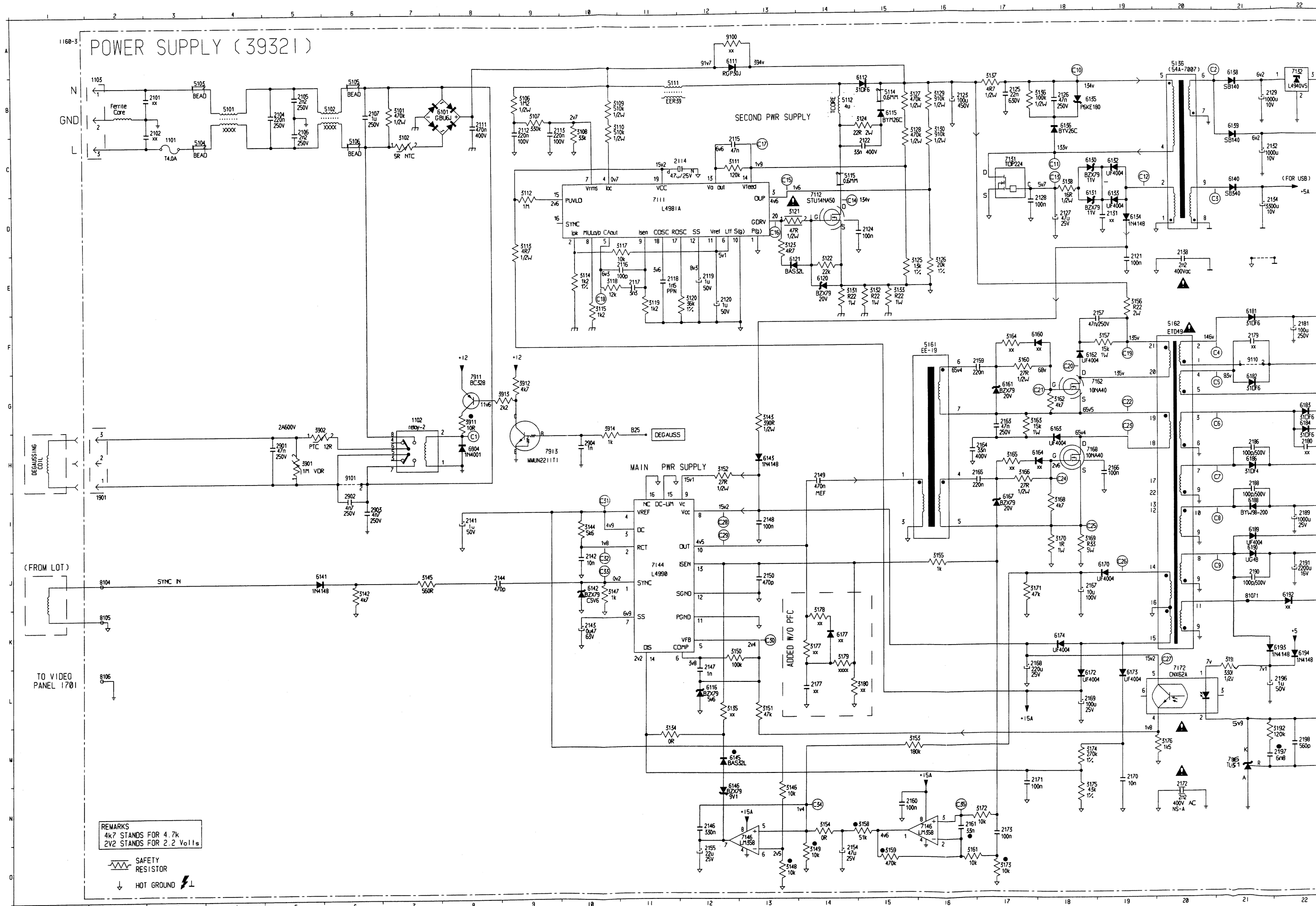


Waveforms

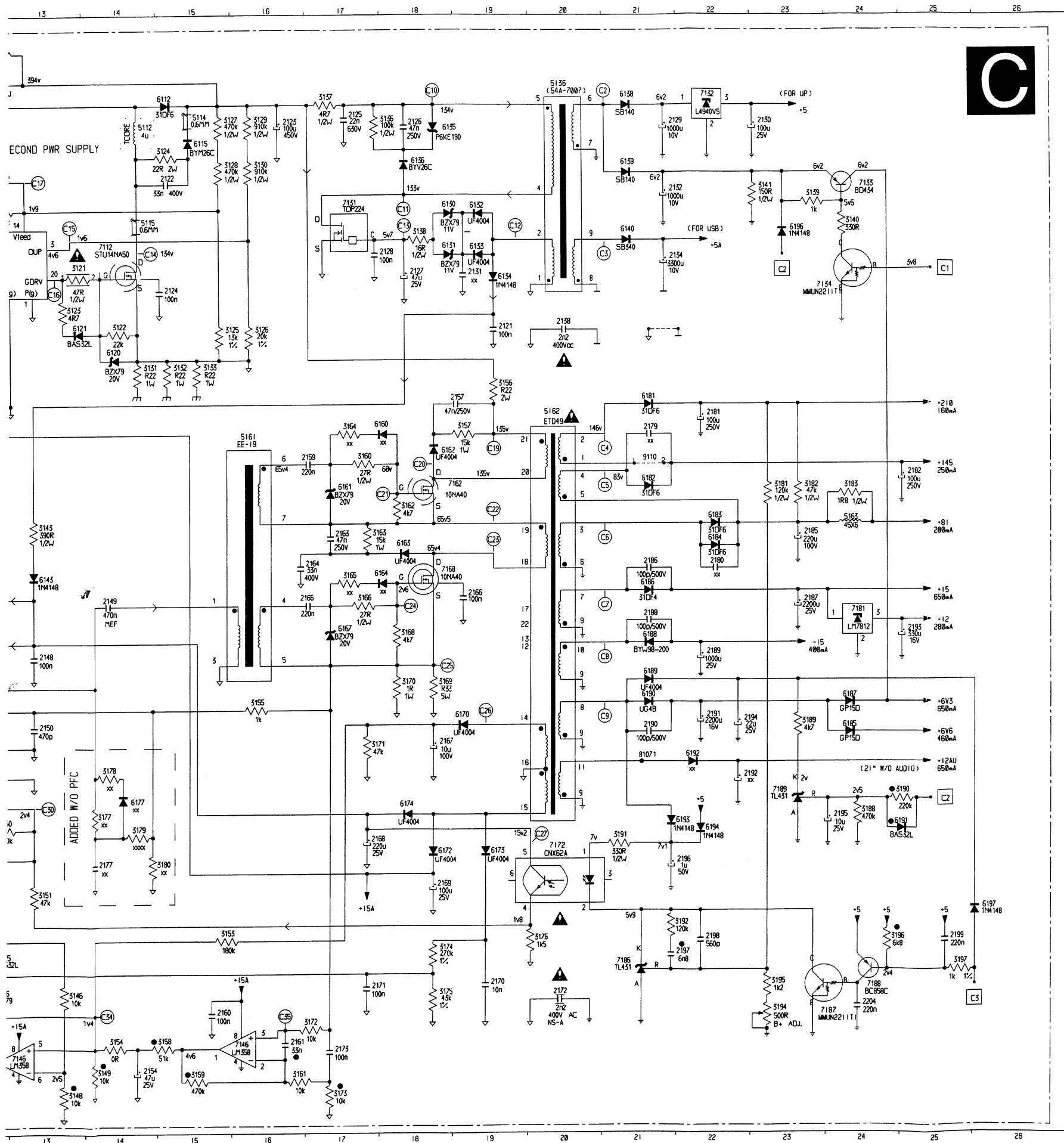




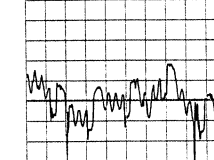
# Power Supply



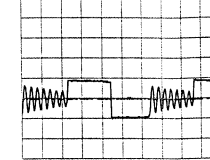
## Wave forms



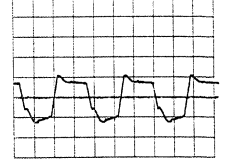
C1 6904-N

50 mV/div AC  
5 uS/div

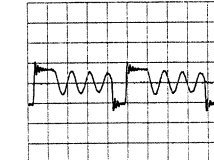
C8 5162-9

2 V/div AC  
5 uS/div

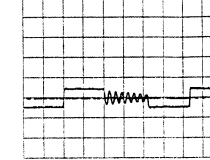
C15 7111-3

20 V/div AC  
5 mS/div

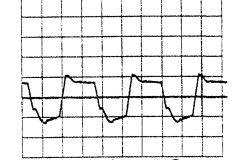
C2 5136-6

10 V/div AC  
2 uS/div

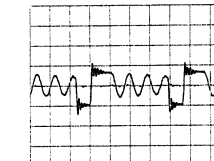
C9 5162-7

2 V/div AC  
5 uS/div

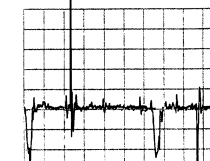
C16 7111-20

20 V/div AC  
5 mS/div

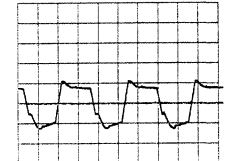
C3 5136-9

10 V/div AC  
2 uS/div

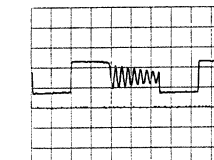
C10 5136-5

100 V/div AC  
2 mS/div

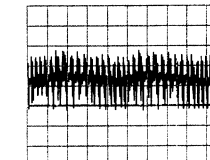
C17 7111-14

20 V/div AC  
5 mS/div

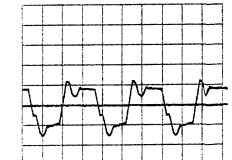
C4 5162-1

10 V/div AC  
5 uS/div

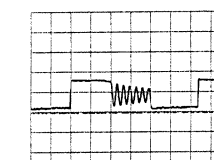
C11 5136-4

100 V/div AC  
2 mS/div

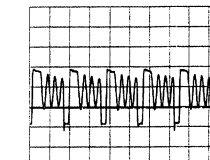
C18 7111-5

20 V/div AC  
5 mS/div

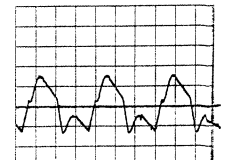
C5 5162-3

10 V/div AC  
5 uS/div

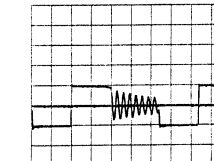
C12 5136-2

20 V/div AC  
5 uS/div

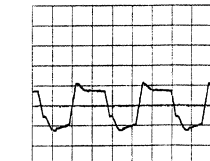
C19 5162-18

20 V/div AC  
5 mS/div

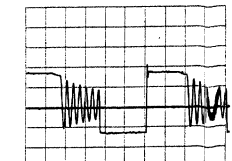
C6 5162-2

10 V/div AC  
5 uS/div

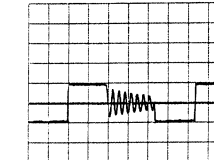
C13 7131-C

20 V/div AC  
5 mS/div

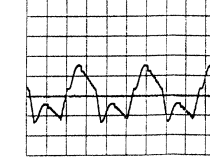
C20 5162-17

50 V/div AC  
5 uS/div

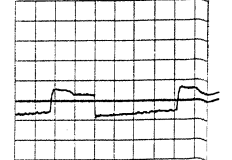
C7 5162-6

2 V/div AC  
5 uS/div

C14 7112-D

20 V/div AC  
5 mS/div

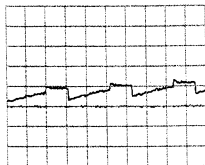
C21 7162-G

10 V/div AC  
5 uS/div



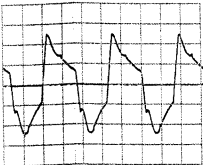
## Waveforms for Diagram C

C22 5162-16



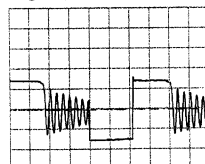
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C29 7144-10



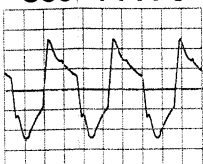
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C23 5162-15



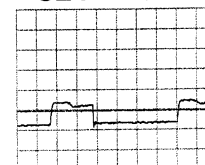
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C30 7144-5



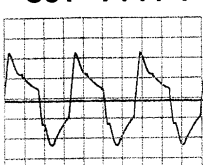
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C24 7168-G



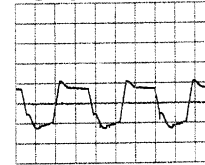
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C31 7144-4



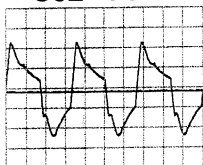
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C25 7168-S



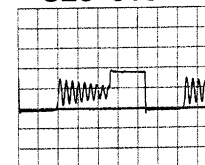
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C32 7144-2



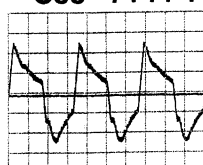
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C26 5162-11



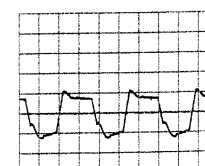
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C33 7144-1



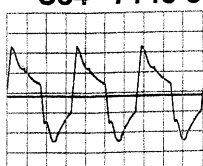
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C27 7172-5



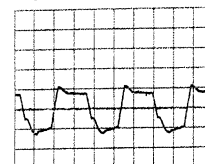
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C34 7146-5



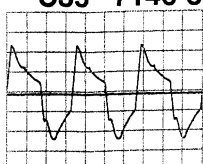
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C28 7144-8



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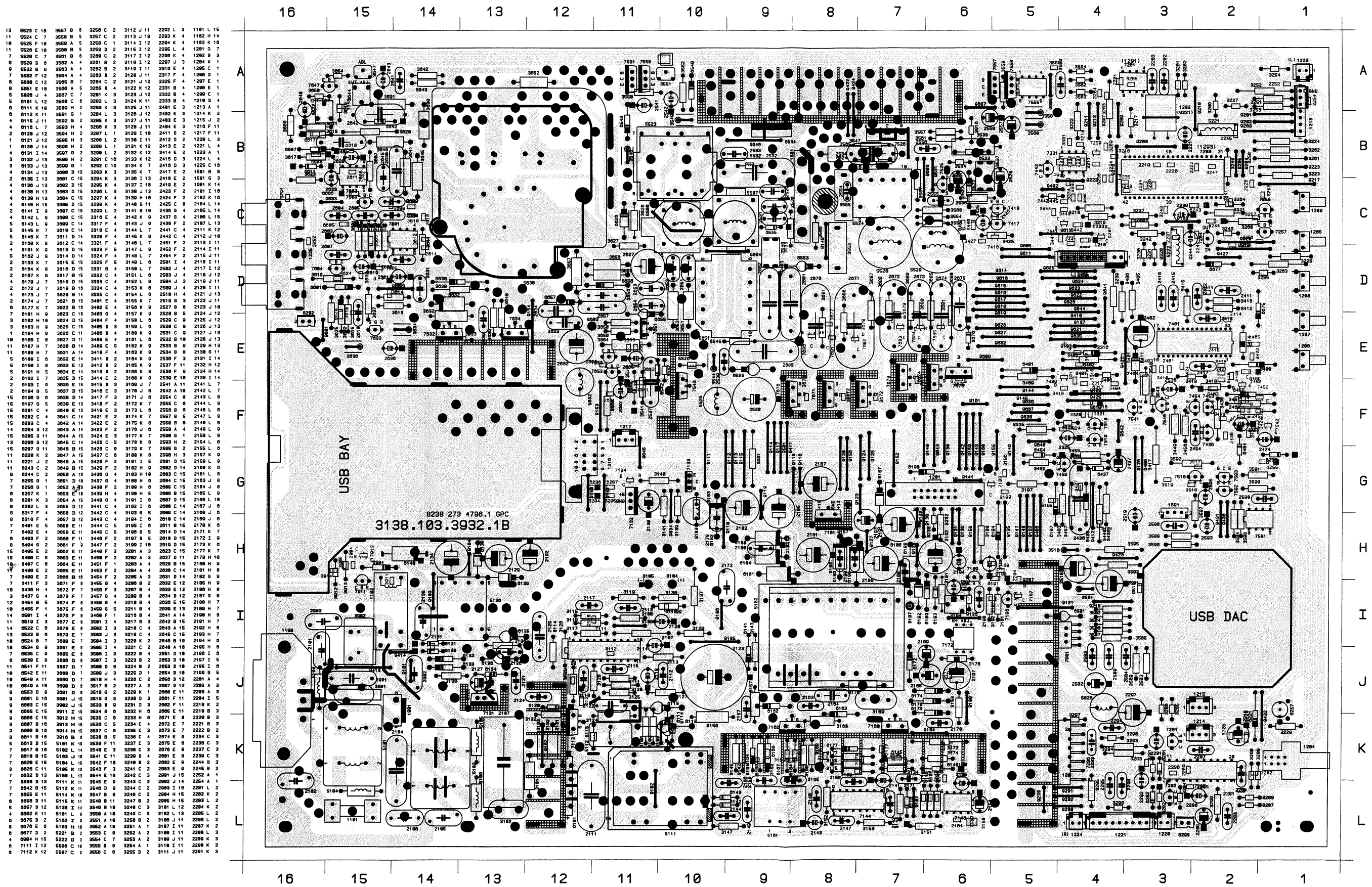
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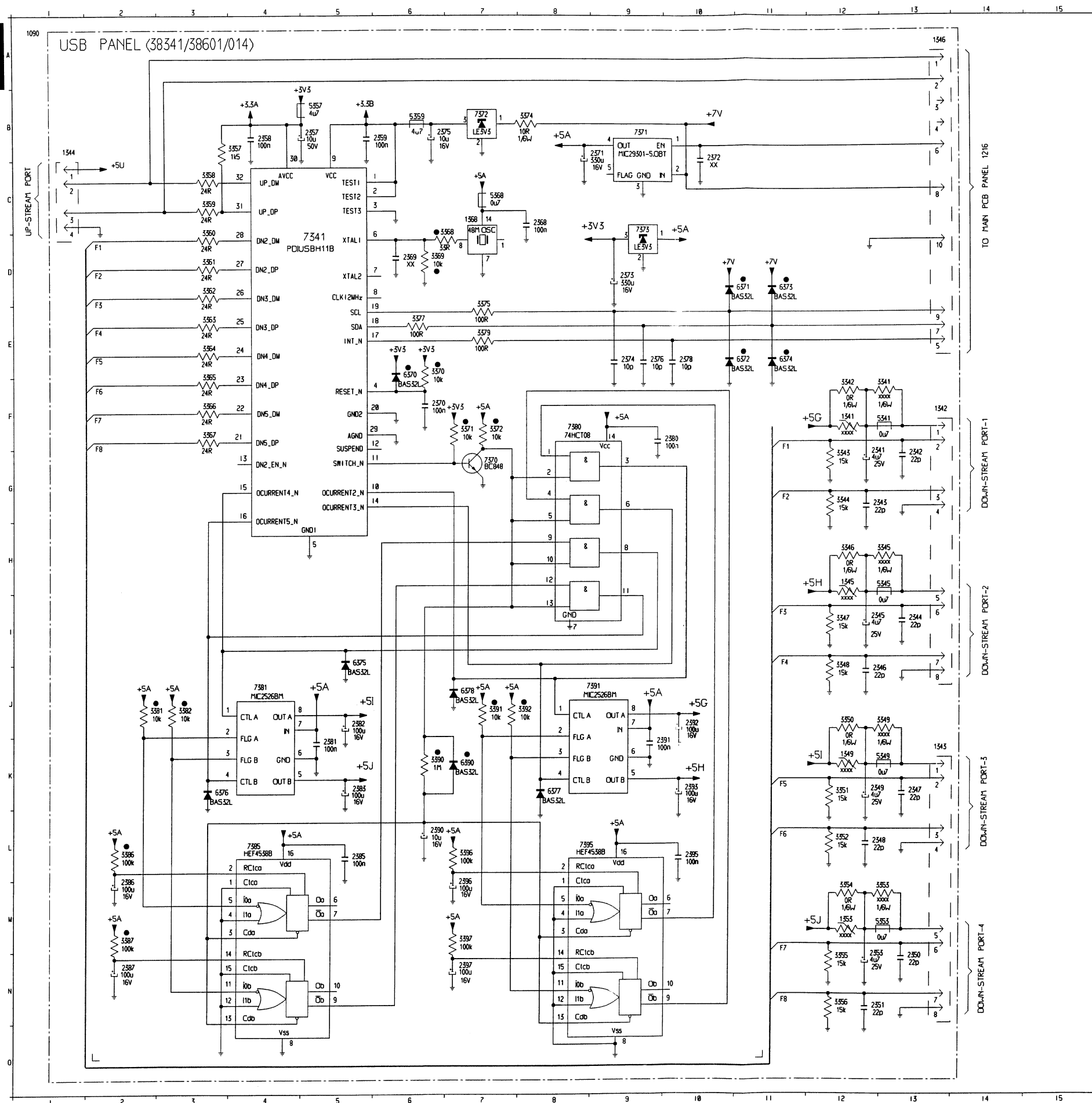
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# Main Panel C.B.A. (B1, B2, B3, C and D)



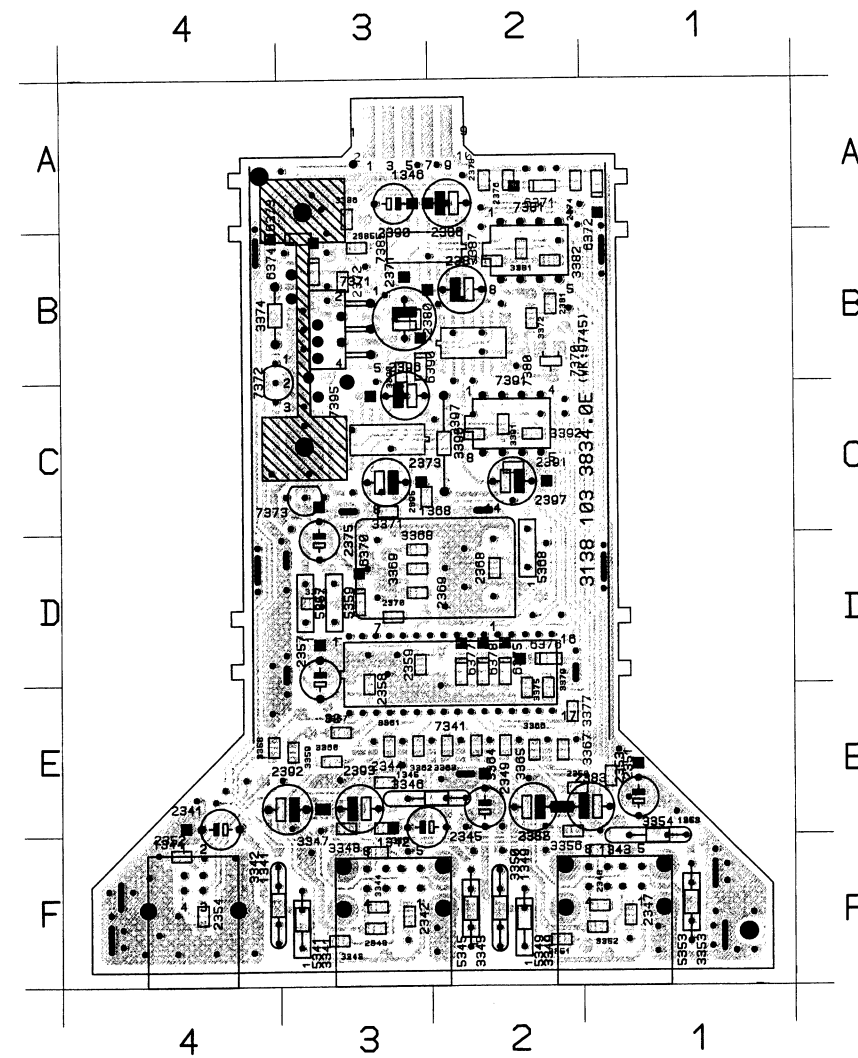
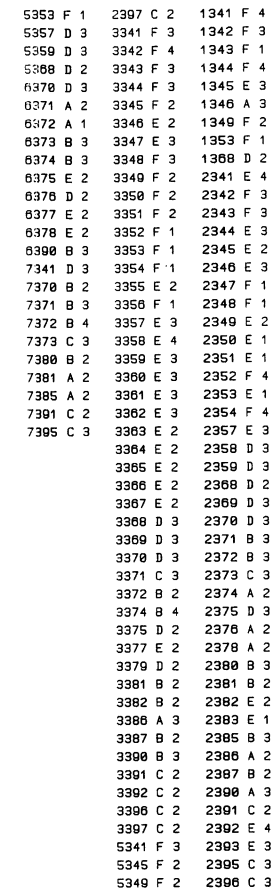
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	3343	H
	3342	G
	3342	F
B	3342	F
	3343	K
	3344	C
	3345	H
	3346	D
C	3346	B
	3346	A
	3346	A
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H	3346	A
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6370	D	3	334
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6390	B	3	335
7341	D	3	335
7370	B	2	335
7371	B	3	335
7372	B	4	335
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7391	C	2	336
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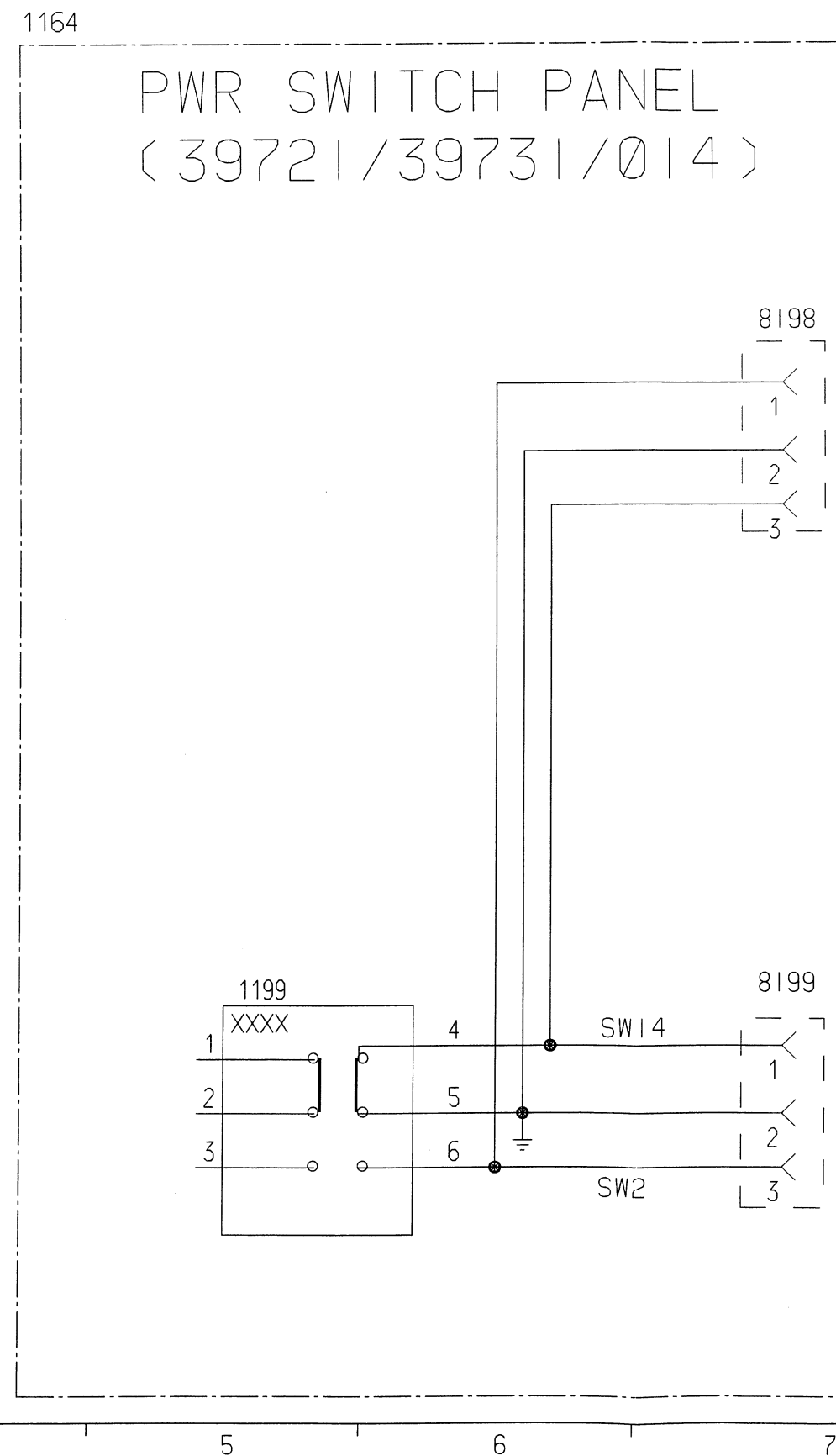
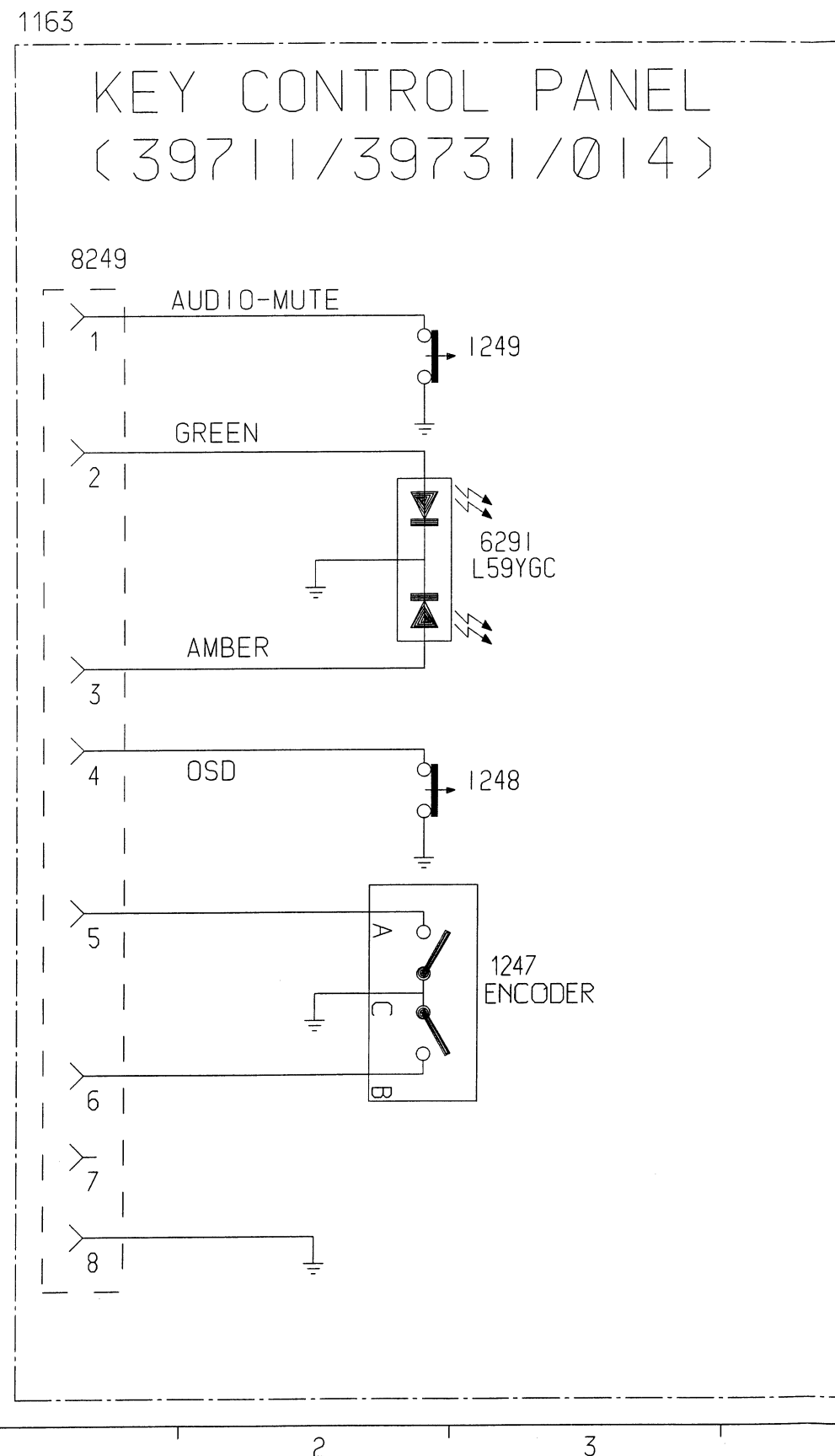




## Key Control

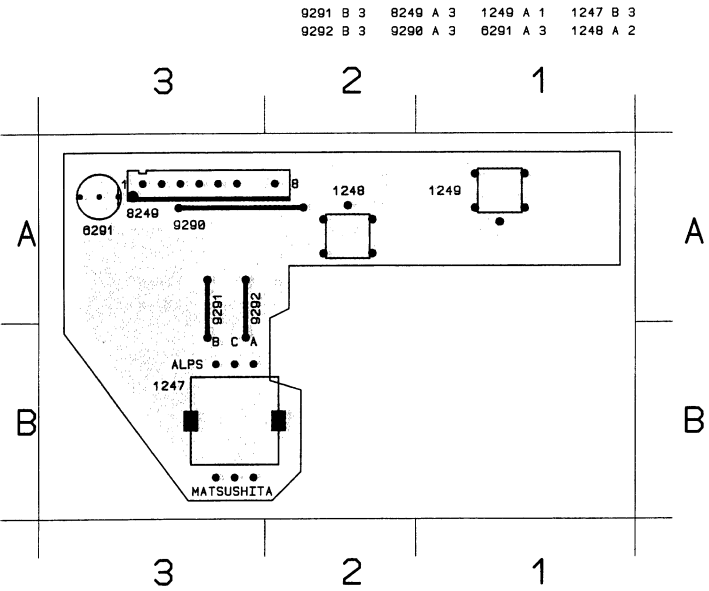
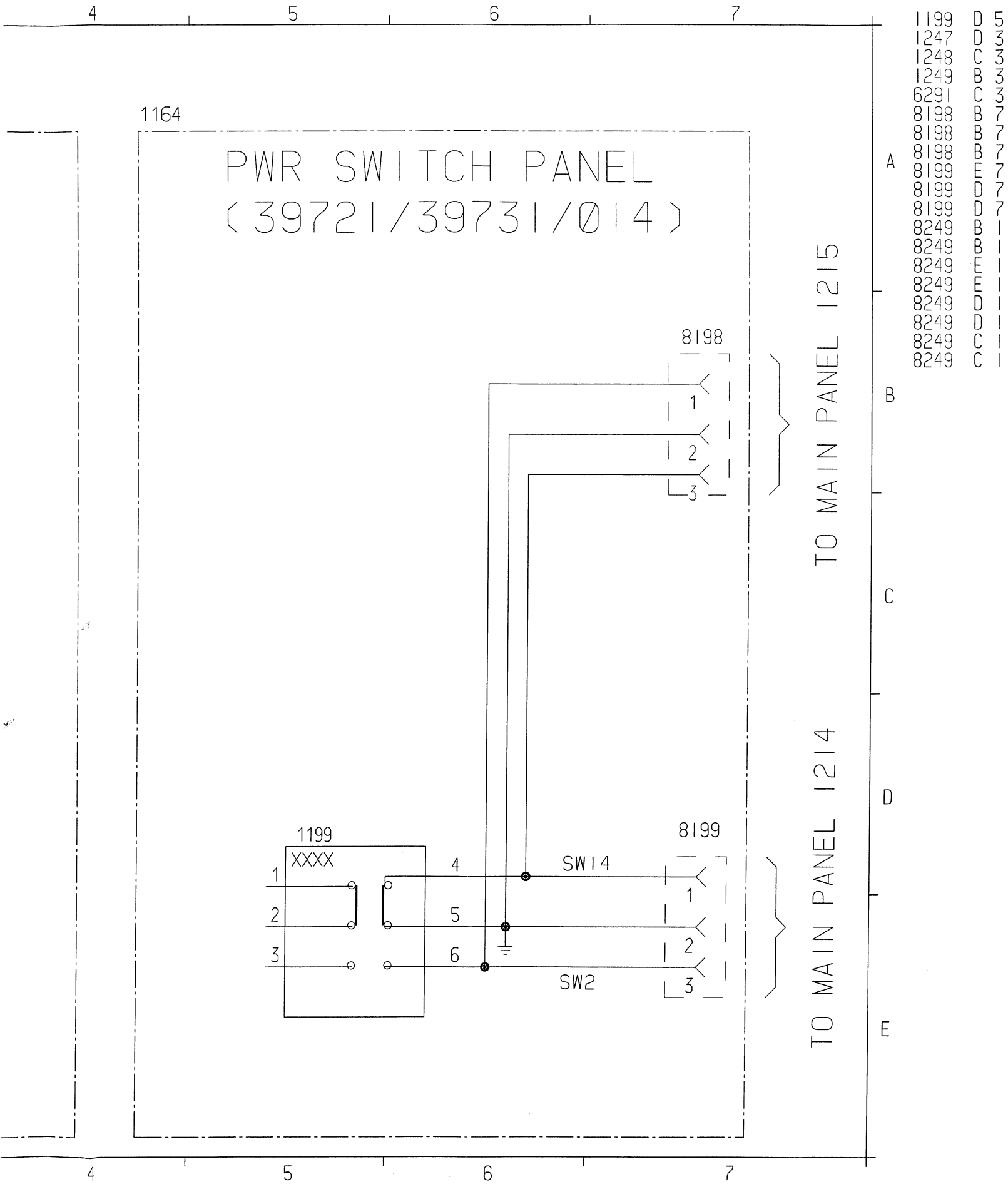
E

TO MAIN PANEL 1213



1199	D	5
1247	O	
1248	C	
1249	B	
6291	C	
8198	B	
8198	B	
8198	B	
8198	B	
8199	F	
8199	D	
8249	B	
8249	B	
8249	F	
8249	F	
8249	C	
8249	C	

Rotary Panel



## 0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

## 1. Servicing of SMDs (Surface Mounted Devices)

### 1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

### 1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

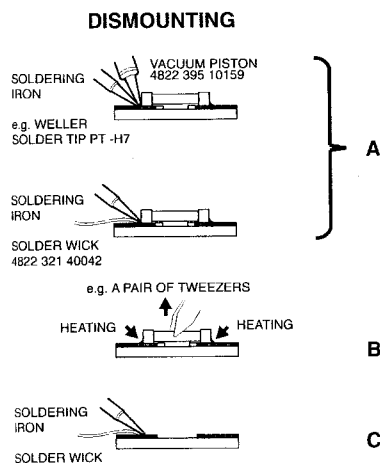


Fig. 1

- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

### 1.3 Caution on removal

- When handling the soldering iron, use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

### 1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig. 2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

## MOUNTING

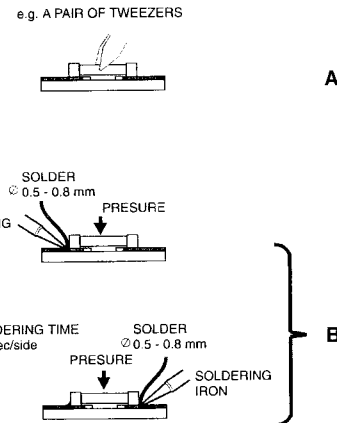


Fig. 2

## 2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

## EXAMPLES

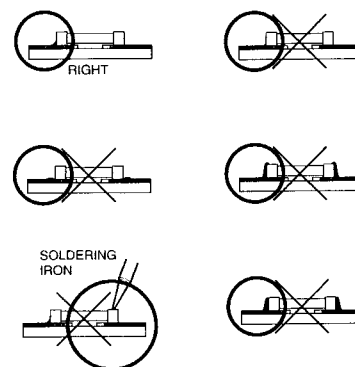
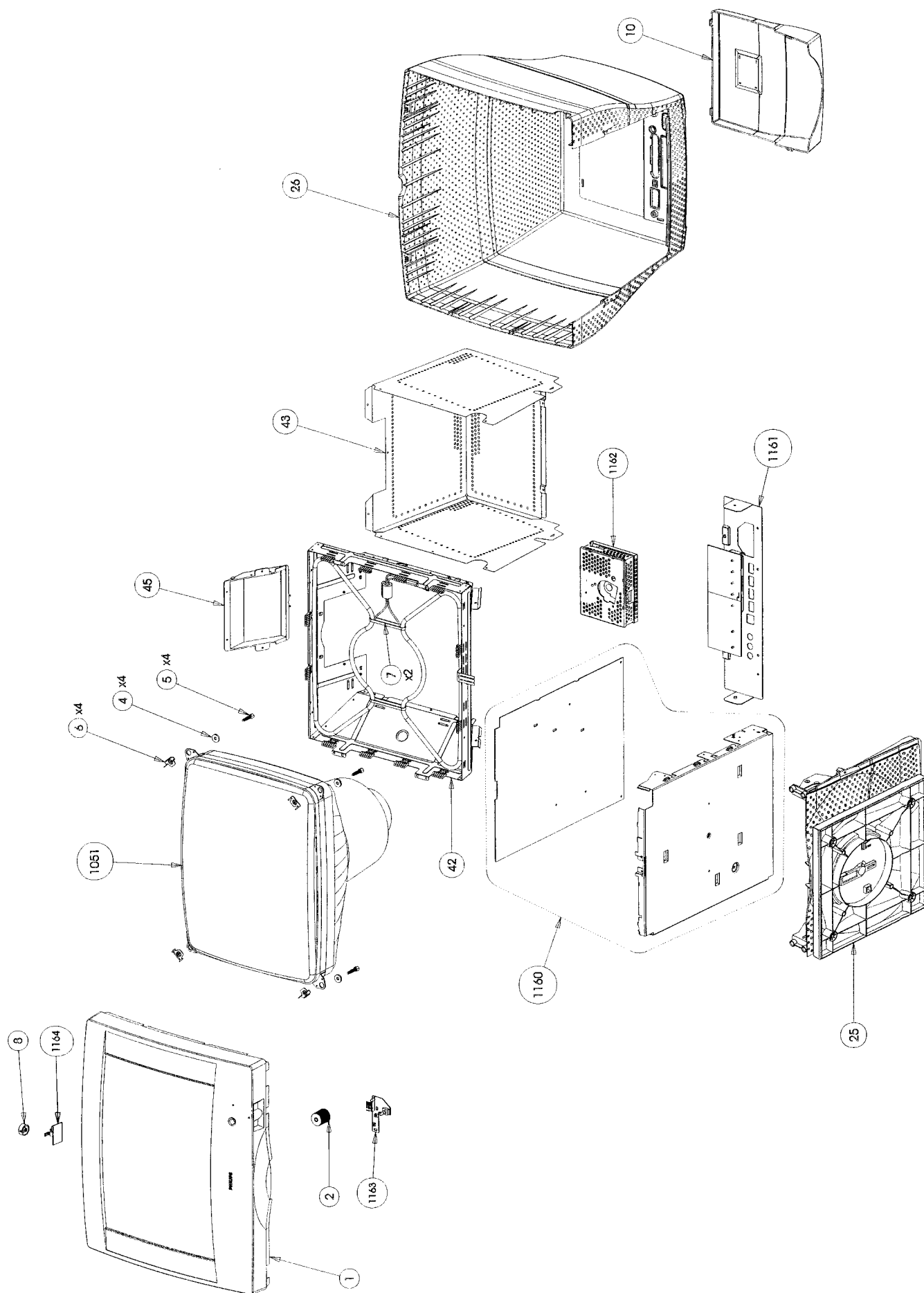


Fig. 3

## Exploded View





# Spare parts list

21" CM5800

29

**Parts indicated on exploded view:**  
**Model: 21A582BH/00C**  
**21B582BH/00C**

1	3138 107 95020	FRONT CAB. ASSY
	3138 104 40740	LENS
	3138 104 40750	FUNCTION KNOB
	3138 104 42680	LOCKER (L)
2	3138 104 40760	ROTARY KNOB
4	3138 101 63950	CRT MOUNTING WASHER
5	3138 100 41320	SCREW
6	3138 101 64480	CRT PLATE
8	3138 104 39380	POWER KNOB
	3138 104 40780	CABLE COVER
10	3138 107 95040	CABLE COVER ASSY
	3138 104 40990	NAME PLATE
25	3138 107 95030	BOTTOM PLATE ASSY
	3138 104 40670	BOTTOM PLATE
	3138 104 38270	SLIDER
	3138 104 39290	BASE - PEDESTAL
26	3138 104 40660	BACK COVER
	3138 104 41710	USB COVER
1051	4822 131 11292	CRT
		M51LEQ183X61(F U)
1160	3138 128 63680	MAN PCB ASSY (for 21B582BH/00C)
1160	3138 128 63730	MAN PCB ASSY (for 21A582BH/00C)
1162	3138 128 63690	VIDEO PCB ASSY
1163	3138 128 63700	ENCODER PCB ASSY
1164	4822 212 11701	DC SWITCH PCB ASSY
1170	3138 128 63720	TERMINAL PCB ASSY

## Various

1055	3138 178 72110	DEGAUSSING COIL
	3138 106 51710	CARTON
	3138 106 51680	CUSHION - TOP LEFT
	3138 106 51690	CUSHION - TOP RIGHT
	3138 106 51700	CUSHION - BOTTOM
	4822 701 14028	P.E. BAG
	3138 117 01000	CD-ROM
		COLORIFIC
	3138 105 35610	D.F.U.
	3138 105 35200	QUICK SET UP GUIDE
	3138 105 35330	QUICK SET UP GUIDE
	4822 265 11089	VGA ADP
		HD15/DB15(MAC, HIGH-END)
	3138 105 34910	EUR. WARRANTY BOOKLET
	4822 701 15012	P.E. BAG
	4822 701 20292	TAPPING SCREW WITH WASHER

## Accessories

1115	4822 321 11297	MAINS CORD (SHIELDING)
1054	3138 178 71150	I/F CABLE

## 1160 Main Panel

## Various

1160	3138 128 63680	MAN PCB ASSY (for 21B582BH/00C)
1160	3138 128 63730	MAN PCB ASSY (for 21A582BH/00C)
	4822 492 71337	SPRING (FUSE HOLDER)

	4822 701 20292	TAPPING SCREW WITH WASHER
	5322 390 20011	VET. SILIC.P4 20GR
1101	4822 070 34002	FUSE, 218004.(4A)
1102	4822 280 70378	RELAY 2P 12V/60MA OMI-SS212 B
1103	3138 128 78430	AC INLET ASSY
1201	4822 267 10696	14P MALE (62511B)
1202	4822 242 10836	12.000 000 MHz
1213	4822 267 10742	7P. MALE
1214	4822 265 31209	3P
1216	4822 267 10704	8P FEMALE
	4822 466 93161	INSULATION PLATE
	4822 466 92891	INSULATING PLATE
	5322 390 20011	VET. SILIC.P4 20GR
1291	5322 255 40958	8-DIP-S-LC
1293	4822 265 10672	42P FEM.
1591	4822 265 31231	3 P MALE
1901	4822 265 30891	2 P.



1266	3138 128 64700	EEPROM IC ASS'Y (for 21B582BH/00C)
1266	3138 128 64710	EEPROM IC ASS'Y (for 21A582BH/00C)

## -II-

2104	4822 121 70446	220nF 20% 250V
2105	4822 121 10661	2.2nF 20% 400V
2106	4822 121 10661	2.2nF 20% 400V
2107	5322 121 44212	1μF 10% 275V
2111	4822 121 43641	470nF 5% 400V
2112	4822 121 43699	220nF 100V
2113	4822 121 43699	220nF 100V
2114	4822 124 80132	47μF 20% 25V
2115	4822 121 43695	47nF 10% 100V
2116	5322 122 32531	100pF 5% 50V
2117	4822 126 10453	50V
2118	4822 121 70547	1.5nF 5% 100V
2119	4822 124 22669	1μF 20% 50V
2120	4822 124 22669	1μF 20% 50V
2121	4822 121 43696	100nF 100V
2122	4822 121 10754	33nF 10% 400V

## -II-

2123	4822 124 11517	450V 100U 20%
2124	4822 121 43696	100nF 100V
2125	4822 121 70357	22nF 10% 630V
2126	4822 121 70386	47nF 10% 250V
2127	4822 124 81186	47U 20% 20%
2128	4822 126 13196	100nF 10% SMD 25V
2129	4822 124 12112	1000μF 20% 10V
2130	4822 124 42145	100μF 20% 25V
2132	4822 124 12112	1000μF 20% 10V
2134	4822 124 12113	3300μF 20% 10V
2138	4822 126 14088	2.2nF 20% 250V
2141	4822 124 22669	1μF 20% 50V
2142	4822 121 43693	10nF 100V
2143	4822 124 40239	0.47μF 20% 63V
2144	5322 122 32311	470pF 10% 100V
2146	4822 126 14107	330nF ±80/20% 25V
2147	5322 122 32331	1nF 10% 100V
2148	4822 121 43696	100nF 100V
2149	4822 121 43913	470nF 10% 100V
2150	5322 122 32311	470pF 10% 100V

2154	4822 124 22678	100μF 20% 16V
2155	4822 124 42199	22μF 20% 50V
2157	4822 121 43908	47nF 10% 250V
2159	4822 121 43699	220nF 100V
2160	4822 126 13196	100nF 10% SMD 25V
2161	4822 126 12105	33nF 5% 63V
2163	4822 121 43908	47nF 10% 250V
2164	4822 121 10754	33nF 10% 400V

## -II-

2165	4822 121 43699	220nF 100V
2166	4822 121 43696	100nF 100V
2167	4822 124 42359	47μF 100V

2168	4822 124 42149	220μF 20% 25V
2169	4822 124 42145	100μF 20% 25V
2170	4822 126 11103	10nF 5% 50V
2171	4822 121 43696	100nF 100V
2172	4822 126 14088	2.2nF 20% 250V
2173	4822 126 13196	100nF 10% SMD 25V
2181	4822 124 11941	100μF 20% 250V
2182	4822 124 11941	100μF 20% 250V
2185	4822 124 12034	220μF 20% 100V
2186	4822 122 32899	100pF 10%B 500V
2187	4822 124 11942	2200μF 20% 25V
2188	4822 122 32899	100pF 10%B 500V
2189	4822 124 11943	1000μF 20% 25V
2190	4822 122 32899	100pF 10%B 500V
2191	4822 124 81285	2200μF 20% 16V
2193	4822 124 40849	330μF 20% 16V
2194	4822 124 42199	22μF 20% 50V
2195	4822 124 23441	10μF 20% 50V
2196	4822 124 22669	1μF 20% 50V
2197	5322 122 31866	6.8nF 10% 63V
2198	5322 122 32336	560pF 10% 100V
2199	4822 126 14076	220N 25V. P8020
2201	4822 126 13196	100nF 10% SMD 25V
2202	5322 122 32143	22pF 100V
2203	5322 122 32143	22pF 100V
2204	4822 126 14076	220N 25V. P8020
2218	5322 124 41817	220μF 16V

2219	5322 122 32659	33pF 5% 50V
2220	5322 122 32659	33pF 5% 50V
2221	4822 124 22681	47μF 20% 16V
2222	4822 122 33575	220pF 5% 50V
2234	5322 122 32658	22pF 5% 50V
2236	5322 122 32658	22pF 5% 50V
2237	5322 122 32531	100pF 5% 50V
2239	4822 124 40433	47μF 20% 25V
2244	4822 124 23539	10μF 20% 50V
2245	4822 126 13196	100nF 10% SMD 25V
2252	4822 126 12944	47nF 10% 50V
2254	4822 126 12944	47nF 10% 50V
2316	4822 126 14076	220N 25V. P8020
2317	4822 126 13196	100nF 10% SMD 25V
2325	4822 124 80132	47μF 20% 25V
2331	4822 126 13196	100nF 10% SMD 25V
2332	5322 122 32531	100pF 5% 50V
2333	5322 122 32531	100pF 5% 50V
2401	4822 122 33575	220pF 5% 50V
2402	4822 124 42172	1000μF 16V
2403	5322 122 32658	22pF 5% 50V
2404	4822 126 13196	100nF 10% SMD 25V
2411	4822 121 43696	100nF 100V
2412	4822 121 10755	8.2nF 5% 100V

## -II-

2413	4822 126 13606	10N 2% 100V
2414	4822 122 32646	5.6nF 10% 50V
2415	4822 121 43696	100nF 100V
2416	4822 121 70312	150nF 10% 100V
2417	4822 121 70631	3.3nF 2.5% 100V
2418	4822 126 12944	47nF 10% 50V
2419	5322 122 32268	470pF 10% 50V
2423	4822 126 12944	47nF 10% 50V
2424	4822 124 42199	22μF 20% 50V
2425	4822 124 23441	10μF 20% 50V

2436	4822 121 70411	220nF 5% 250V
2437	4822 124 42145	100μF 20% 25V
2438	4822 122 33575	220pF 5% 50V
2441	5322 122 32531	100pF 5% 50V
2442	4822 126 13196	100nF 10% SMD 25V
2451	4822 124 22681	47μF 20% 16V
2452	5322 122 34123	1nF 10% 50V
2454	4822 121 43696	100nF 100V
2501	4822 124 42144	470μF 63V
2502	4822 124 22336	100μF 20% 40V

2503	4822 126 14106	220pF 5% 50V
2504	4822 121 43693	10nF 100V
2509	4822 121 43913	470nF 10% 100V
2510	4822 124 42144	470μF 63V
2519	4822 124 23539	10μF 20% 50V
2527	4822 124 22675	1μF 20% 160V
2528	4822 124 22675	1μF 20% 160V
2529	4822 126 13035	220pF 10% 2KV
2530	4822 126 13035	220pF 10% 2KV
2532	4822 121 10756	3.6nF 2% 2KV

## -II-

2531	4822 121 43364	10nF 10% 400V
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2533	4822 126 10783	100pF 5% 2KV
2536	4822 124 22681	47μF 20% 16V
2537	4822 121 43918	100nF 10% 400V
2538	4822 124 80834	100μF 20% 250V
2539	4822 122 33646	470pF 10% 500V
2541	4822 124 22681	47μF 20% 16V
2542	4822 124 22681	47μF 20% 16V
2554	4822 122 33968	1nF 5% 500V
2555	4822 121 43913	470nF 10% 100V

2557	4822 124 42145	100μF 20% 25V
2558	4822 124 42145	100μF 20% 25V
2559	4822 121 43696	100nF 100V
2590	4822 121 43696	100nF 100V
2593	4822 124 80132	47μF 20% 25V
2595	4822 124 80132	47μF 20% 25V
2596	4822 121 43696	100nF 100V
2601	4822 124 42199	22μF 20% 50V
2602	4822 121 43696	100nF 100V
2603	4822 124 23539	10μF 20% 50V

2604	4822 126 10453	50V
2605	4822 121 70162	10nF 5% 400V
2606	4822 122 33177	10nF 20% 50V
2607	4822 126 11099	100pF 5% 50V
2608	5322 122 32331	1nF 10% 100V
2609	4822 126 10453	50V
2611	4822 126 13196	100nF 10% SMD 25V
2614	4822 122 33891	3.3nF 10% 63V
2618	4822 121 43697	330nF 10% 100V
2619	4822 124 42357	33μF 25V

2642	4822 121 41893	33μF 10% 100V
2645	4822 126 13134	11F 10% 1KV
2646	4822 121 40336	47nF 10% 250V
2648	4822 124 41659	47μF 20% 25V
2651	4822 126 14413	270pF 10% 2KV
2653	4822 126 13134	11F 10% 1KV
2654	4822 126 13134	11F 10% 1KV
2656	4822 126 12651	10nF 20% 2K
2657	4822 126 12651	10nF 20% 2K
2660	4822 126 13196	10nF 10% <b>5MD</b>

3126	4822 050 22003	20k 1% 0.6W	3239	4822 050 23303	33k 1% 0.6W	3508	4822 050 24701	470Ω 1% 0.6W	3647	4822 100 11585	22k 30%LIN 0.1W
3127	4822 050 24704	470k 1% 0.6W	3240	4822 050 21001	100Ω 1% 0.6W	3509	4822 050 22208	2Ω 1% 0.6W	3648	4822 117 10833	10k 1% 0.1W
3128	4822 050 24704	470k 1% 0.6W	3241	4822 051 20101	100Ω 5% 0.1W	3510	4822 052 11228	2Ω 5% 0.5W	3649	4822 050 22702	2k7 1% 0.6W
3129	4822 050 29104	910k 1% 0.6W	3242	4822 050 21001	100Ω 1% 0.6W	3517	4822 051 20472	4k7 5% 0.1W	3650	4822 050 21203	12k 1% 0.6W
3130	4822 050 29104	910k 1% 0.6W	3243	4822 051 20008	0Ω JUMP. (SMD)	3518	4822 051 20223	22k 5% 0.1W	3651	4822 053 21224	220k 5% 0.5W
3131	4822 117 11744	0Ω 22 5% 1W	3244	4822 051 20822	8k2 5% 0.1W	3519	4822 051 20223	22k 5% 0.1W	3652	4822 111 50617	2k2 10% 0.5W
3132	4822 117 11744	0Ω 22 5% 1W	3246	4822 050 24702	4k7 1% 0.6W	3533	4822 052 21501	150Ω 1% 0.6W	3653	4822 053 21104	100k 5% 0.5W
3133	4822 117 11744	0Ω 22 5% 1W	3247	4822 051 20101	100Ω 5% 0.1W	3534	4822 050 24709	47Ω 1% 0.6W	3654	4822 050 25602	5k6 1% 0.6W
3134	5322 116 51882	0Ω jumper FR25)	3248	4822 051 20472	4k7 5% 0.1W	3535	4822 117 10833	10k 1% 0.1W	3655	4822 117 10118	1M 5% 0.5W
			3249	4822 050 24702	4k7 1% 0.6W	3536	4822 052 11279	27Ω 5% 0.5W	3656	4822 117 10118	1M 5% 0.5W
3136	4822 050 21004	100k 1% 0.6W				3537	4822 117 13284	390Ω 7W	3657	4822 050 21502	1k5 1% 0.6W
3137	4822 050 24708	4Ω 7 1% 0.6W				3538	4822 117 13285	2k2 3W			
			3250	4822 117 10833	10k 1% 0.1W	3540	4822 052 10828	8Ω 2 5% 0.33W	3658	4822 050 23302	3k3 1% 0.6W
			3251	4822 050 24702	4k7 1% 0.6W	3541	4822 050 24709	47Ω 1% 0.6W	3659	4822 050 21002	1k 1% 0.6W
			3252	4822 050 22201	220Ω 1% 0.6W	3542	4822 050 21003	10k 1% 0.6W	3660	4822 050 23903	39k 1% 0.6W
			3253	4822 050 24702	4k7 1% 0.6W				3661	4822 050 24701	470Ω 1% 0.6W
			3254	4822 050 22201	220Ω 1% 0.6W	3543	4822 050 21202	1k2 1% 0.6W	3662	4822 051 20223	22k 5% 0.1W
			3255	4822 050 21503	15k 1% 0.6W	3544	4822 052 11108	1Ω 5% 0.5W	3663	4822 051 20104	100k 5% 0.5W
			3256	4822 051 20472	4k7 5% 0.1W	3545	4822 117 10442	10Ω 5%	3664	4822 117 10118	1M 5% 0.5W
			3257	4822 117 11504	270Ω 1% 0.1W	3546	4822 117 12941	33Ω 5% 7W	3665	4822 051 20302	3k 5% 0.1W
			3258	4822 051 20121	120Ω 5% 0.1W	3547	4822 117 13081	68Ω 1% 0.5W	3666	4822 050 21002	1k 1% 0.6W
			3259	4822 051 20332	3k3 5% 0.1W	3548	4822 052 10108	1Ω 5% 0.33W	3671	4822 051 20104	100k 5% 0.1W
			3260	4822 050 22203	22k 1% 0.6W	3549	4822 052 10108	1Ω 5% 0.33W			
			3261	4822 050 21001	100Ω 1% 0.6W	3550	4822 050 26801	680Ω 1% 0.6W	3672	4822 051 20104	100k 5% 0.1W
			3262	4822 050 21001	100Ω 1% 0.6W	3551	4822 100 11141	10k 30%lin 0.1W	3673	4822 050 21004	10k 1% 0.1W
			3263	4822 050 21001	100Ω 1% 0.6W	3552	4822 050 26801	680Ω 1% 0.6W	3674	4822 051 20104	100k 5% 0.1W
			3264	4822 050 21001	100Ω 1% 0.6W				3675	4822 051 20104	100k 5% 0.1W
			3265	4822 051 20008	0Ω JUMP. (SMD)	3553	4822 117 12675	150Ω 5% 5W	3676	4822 051 20104	100k 5% 0.1W
			3316	4822 051 20472	4k7 5% 0.1W	3554	4822 050 24701	470Ω 1% 0.6W	3677	4822 051 20008	0Ω JUMP. (SMD)
			3317	4822 051 20472	4k7 5% 0.1W	3555	4822 117 12675	150Ω 5% 5W	3678	4822 051 20008	0Ω JUMP. (SMD)
			3318	4822 051 20154	150k 5% 0.1W	3556	4822 050 24701	470Ω 1% 0.6W	3679	4822 051 20008	0Ω JUMP. (SMD)
			3321	4822 051 20472	4k7 5% 0.1W	3557	4822 050 23909	39Ω 1% 0.6W	3680	4822 051 20008	0Ω JUMP. (SMD)
						3558	4822 052 11828	8Ω 2 5% 0.5W	3681	4822 051 20008	0Ω JUMP. (SMD)
			3323	4822 050 21002	1k 1% 0.6W	3559	4822 050 24701	470Ω 1% 0.6W			
			3324	4822 117 11449	2k2 1% 0.1W	3560	4822 052 11828	8Ω 2 5% 0.5W	3685	4822 050 22202	2k2 1% 0.6W
			3325	4822 052 10478	4Ω 7 5% 0.33W	3561	4822 050 23909	39Ω 1% 0.6W	3686	4822 050 11003	10k 1% 0.4W
			3331	4822 051 20101	100Ω 5% 0.1W	3562	4822 050 21001	100Ω 1% 0.6W	3687	4822 050 11003	10k 1% 0.4W
			3332	4822 117 10834	47k 1% 0.1W				3688	4822 050 11003	10k 1% 0.4W
			3333	4822 117 10834	47k 1% 0.1W	3563	4822 050 21203	12k 1% 0.6W	3689	4822 050 11003	10k 1% 0.4W
			3334	4822 051 20101	100Ω 5% 0.1W	3564	4822 050 22702	2k7 1% 0.6W	3690	4822 050 11003	10k 1% 0.4W
			3335	4822 051 20101	100Ω 5% 0.1W	3565	4822 117 13286	2Ω 2 5W	3691	4822 050 11003	10k 1% 0.4W
			3401	4822 051 20471	470Ω 5% 0.1W	3566	4822 117 11383	12k 1% 0.1W	3901	4822 116 21237	1M A/100V
			3402	4822 050 24701	470Ω 1% 0.6W	3567	4822 050 24708	4Ω 7 1% 0.6W	3902	4822 116 40144	12Ω
						3568	4822 050 21002	1k 1% 0.6W	3911	4822 051 20109	10Ω 5% 0.1W
			3403	4822 050 21001	100Ω 1% 0.6W	3569	4822 050 24708	4Ω 7 1% 0.6W			
			3404	4822 117 10833	10k 1% 0.1W	3591	4822 050 11003	10k 1% 0.4W	3912	4822 050 24702	4k7 1% 0.6W
			3405	4822 050 21001	100Ω 1% 0.6W	3592	4822 050 21203	12k 1% 0.6W	3913	4822 116 82046	2k2 5% 1/6W
			3406	4822 050 21001	100Ω 1% 0.6W	3593	4822 052 10479	47Ω 5% 0.33W	3914	4822 051 20102	1k 5% 0.1W
			3408	4822 050 24701	470Ω 1% 0.6W				3916	4822 050 24701	470Ω 1% 0.6W
			3409	4822 050 22202	2k2 1% 0.6W	3594	4822 050 11003	10k 1% 0.4W			
			3410	4822 117 11449	2k2 1% 0.1W	3595	4822 052 10479	47Ω 5% 0.33W			
			3411	4822 051 20332	3k3 5% 0.1W	3596	4822 050 24701	470Ω 1% 0.6W			
			3412	4822 050 25101	510Ω 1% 0.6W	3597	4822 050 22209	22Ω 1% 0.6W	5101	4822 157 71663	LINE TER
			3413	4822 050 22702	2k7 1% 0.6W	3598	4822 050 22202	2k2 1% 0.6W	5102	4822 157 71663	LINE TER
						3599	4822 050 23303	33k 1% 0.6W	5103	4822 526 10522	IND FXD BEAD
			3414	4822 050 24702	4k7 1% 0.6W	3600	4822 117 10834	47k 1% 0.1W			
			3415	4822 116 52257	22k 5% 0.5W	3601	4822 050 22202	2k2 1% 0.6W	5104	4822 526 10522	IND FXD BEAD
			3416	4822 051 20472	4k7 5% 0.1W	3602	4822 117 12755	120k 1%			
			3417	4822 050 26803	68k 1% 0.6W	3603	4822 050 21004	100k 1% 0.6W	5105	4822 526 10522	IND FXD BEAD
			3418	4822 050 22204	220k 1% 0.6W						
			3419	4822 050 26803	68k 1% 0.6W	3604	4822 050 28202	8k2 1% 0.6W	5106	4822 526 10522	IND FXD BEAD
			3421	4822 117 11383	12k 1% 0.1W	3605	4822 050 22709	27Ω 1% 0.6W			
			3422	4822 117 11449	2k2 1% 0.1W	3607	4822 050 11003	10k 1% 0.4W			
			3423	4822 051 20124	120k 5% 0.1W	3608	4822 051 20154	150k 5% 0.1W	5111	3138 178 72070	PFC CHOKE
			3424	4822 051 20008	0Ω JUMP. (SMD)	3609	4822 051 20472	4k7 5% 0.1W	5112	3138 178 72130	T CORE
						3611	4822 050 28201	820Ω 1% 0.6W	5136	3138 128 78010	USB
			3425	4822 050 24708	4Ω 7 1% 0.6W	3612	4822 051 20562	5k6 5% 0.1W			
			3426	4822 117 11449	2k2 1% 0.1W				5161	3138 128 73760	DRIVER
			3427	4822 051 20472	4k7 5% 0.1W						
			3428	4822 117 10833	10k 1% 0.1W						
			3429	4822 117 10833	10k 1% 0.1W	3613	4822 050 22201	220Ω 1% 0.6W			
			3436	4822 050 26802	68k 1% 0.6W	3614	4822 116 52257	22k 5% 0.5W			
			3437	4822 117 10833	10k 1% 0.1W	3615	4822 116 52257	22k 5% 0.5W			
			3438	4822 050 21503	15k 1% 0.6W				5162	3138 178 72170	POWER
			3439	4822 051 20472	4k7 5% 0.1W	3616	4822 050 11003	10k 1% 0.4W			
			3440	4822 052 10828	8Ω 2 5% 0.33W	3617	4822 050 21002	1k 1% 0.6W			
						3618	4822 117 10834	47k 1% 0.1W	5221	4822 157 53189	CHOCK COIL
			3441	4822 117 11449	2k2 1% 0.1W	3619	4822 050 21004	100k 1% 0.6W			
			3442	4822 117 11449	2k2 1% 0.1W	3620	4822 050 25603	56k 1% 0.6W	5222	4822 157 53189	CHOCK COIL
			3443	4822 117 11449	2k2 1% 0.1W	3621	4822 050 25103	51k 1% 0.6W			
			3444	4822 117 10833	10k 1% 0.1W	3622	4822 101 11741	20k LIN CERMET	5506	4822 157 71419	H SHIFT CHOKE
			3445	4822 116 82046	2k2 5% 1/6W	3623	4822 052 10478	4Ω 7 5% 0.33W			
			3446	4822 117 10833	10k 1% 0.1W	3624	4822 051 20102	1k 5% 0.1W	5507	4822 157 11201	PUNK HEAD
			3447	4822 117 10833	10k 1% 0.1W	3625	4822 050 22202	2k2 1% 0.6W			
			3449	4822 052 10478	4Ω 7 5% 0.33W				5523	4822 146 10737	HOR.CENTERING
			3450	4822 051 20472	4k7 5% 0.1W						
			3451	4822 050 24702	4k7 1% 0.6W						
			3453	4822 117 11503	220Ω 1% 0.1W						
			3454	4822 117 10834	47k 1% 0.1W						
			3455	4822 050 21504	150k 1% 0.6W						
			3456	4822 050 24703	47k 1% 0.6W						
			3457	48							

6111	4822 130 80572	RGP30J	6626	4822 130 31393	BYT52J	7603	4822 130 42231	BC557C	3002	4822 051 20334	330k 5% 0.1W
6112	4822 130 10746	31DF6	6632	4822 130 10746	31DF6	7604	4822 130 44196	BC548C	3003	4822 051 20759	75Ω 5% 0.1W
6115	5322 130 10709	BYM26C	6638	4822 130 30621	1N4148	7605	5322 130 42756	BC857C	3004	4822 051 20759	75Ω 5% 0.1W
6116	4822 130 34173	BZX79-B5V6	6642	4822 130 34685	BZX79-B75				3005	4822 051 20759	75Ω 5% 0.1W
6120	4822 130 34499	BZX79-B20	6655	4822 130 60815	BYV26E	7632	5322 130 63002	IRF640	3006	4822 051 20759	75Ω 5% 0.1W
6121	4822 130 80446	BAS32L	6656	5322 130 32274	BY584	7633	4822 130 63081	BSN254A	3007	4822 051 20759	75Ω 5% 0.1W
6130	4822 130 34488	BZX79-B11	6657	5322 130 32274	BY584	7634	4822 130 11232	STU8NA80	3008	4822 117 11449	2k2 1% 0.1W
6131	4822 130 34488	BZX79-B11					5322 390 20011	VET SILIC.P4	3009	4822 117 11449	2k2 1% 0.1W
6132	4822 130 10742	UF4004	6662	4822 130 34197	BZX79-B12			20GR	3010	4822 117 11449	2k2 1% 0.1W
6133	4822 130 10742	UF4004	6675	4822 130 30621	1N4148	7647	4822 130 44196	BC548C			
6134	4822 130 30621	1N4148	6676	4822 130 34233	BZX79-B5V1	7651	4822 130 70025	BUX87P	3011	4822 117 11449	2k2 1% 0.1W
6135	5322 130 80282	P6KE180A	6677	4822 130 30621	1N4148	7652	4822 130 44196	BC548C	3012	4822 051 20479	47Ω 5% 0.1W
6136	4822 130 32343	BYV26C	6904	4822 130 31438	1N4001G	7653	4822 130 44196	BC548C	3013	4822 051 20479	47Ω 5% 0.1W
6138	5322 130 81917	SB140				7671	5322 130 63002	IRF640	3014	4822 051 20479	47Ω 5% 0.1W
6139	5322 130 81917	SB140					5322 390 20011	VET SILIC.P4	3015	4822 051 20479	47Ω 5% 0.1W
6140	4822 130 32715	SB340				7672	5322 130 63002	IRF640	3016	4822 051 20479	47Ω 5% 0.1W
6141	4822 130 30621	1N4148					5322 390 20011	VET SILIC.P4	3017	4822 051 20479	47Ω 5% 0.1W
6142	4822 130 34173	BZX79-B5V6	7111	4822 209 16121	L4981A	7673	5322 130 63002	IRF640	3018	4822 051 20101	100Ω 5% 0.1W
6143	4822 130 30621	1N4148	7112	4822 130 11117	STU14NA50		5322 390 20011	VET SILIC.P4	3019	4822 051 20471	47Ω 5% 0.1W
6145	4822 130 80446	BAS32L		5322 390 20011	VET SILIC.P4			20GR	3020	4822 050 21001	100Ω 1% 0.6W
6146	4822 130 30862	BZX79-B9V1				7674	5322 130 63002	IRF640			
							5322 390 20011	VET SILIC.P4	3021	4822 051 20301	300Ω 5% 0.1W
6161	4822 130 34499	BZX79-B20	7131	4822 130 11233	TOP224Y	7675	5322 130 63002	IRF640	3022	4822 051 20229	22Ω 5% 0.1W
6162	4822 130 10742	UF4004	7132	4822 209 13061	L4940V5	7676	5322 130 63002	IRF640	3023	4822 051 20101	100Ω 5% 0.1W
6163	4822 130 10742	UF4004	7133	4822 130 40995	BD438				3024	4822 051 20101	100Ω 5% 0.1W
6167	4822 130 34499	BZX79-B20	7134	4822 130 10829	MUN2211J				3025	4822 051 20569	56Ω 5% 0.1W
6170	4822 130 10742	UF4004	7144	4822 209 16097	L4990				3026	4822 051 20101	100Ω 5% 0.1W
6172	4822 130 10742	UF4004	7146	4822 209 70672	LM358N SEL.				3027	4822 051 20101	100Ω 5% 0.1W
6173	4822 130 10742	UF4004	7162	4822 130 10831	STP10NA40				3028	4822 051 20101	100Ω 5% 0.1W
6174	4822 130 10742	UF4004	7168	4822 130 10831	STP10NA40				3029	4822 051 20101	100Ω 5% 0.1W
6181	4822 130 10746	31DF6		5322 390 20011	VET SILIC.P4	7681	4822 130 10829	MUN2211J	3030	4822 051 20102	1k 5% 0.1W
6182	4822 130 10746	31DF6	7172	4822 130 80908	CNX62A	7682	4822 130 10829	MUN2211J			
			7181	4822 209 81726	MC7812CT	7683	4822 130 10829	MUN2211J	3031	4822 051 20569	56Ω 5% 0.1W
				5322 390 20011	VET SILIC.P4	7684	4822 130 10829	MUN2211J	3032	4822 051 20339	33Ω 5% 0.1W
									3033	4822 051 20339	33Ω 5% 0.1W
6183	4822 130 10746	31DF6	7186	4822 209 81397	TL431CLPST	7685	4822 130 10829	MUN2211J	3034	4822 051 20339	33Ω 5% 0.1W
6184	4822 130 10746	31DF6	7187	4822 130 10829	MUN2211J	7686	4822 130 10829	MUN2211J			
6186	4822 130 11113	31DF4-FC5	7188	4822 130 42513	BC858C	7911	4822 130 44104	BC328			
6187	4822 130 41601	BYV95A				7913	4822 130 10829	MUN2211J			
6188	4822 130 83909	BYW98-200RL					4822 502 21358	SCREW			
6189	4822 130 10742	UF4004	7189	4822 209 81397	TL431CLPST			W/SPRING			
6190	4822 130 10835	UG4B	7201		This is an empty IC, please refer to item "1266" for spare parts ordering.			WASHER M4X10			
6191	4822 130 80446	BAS32L							5001	4822 152 20596	IND FXD SP0305 A 4U7 PM10 B
6193	4822 130 30621	1N4148									
6194	4822 130 30621	1N4148									
6196	4822 130 30621	1N4148									
6197	4822 130 30621	1N4148									
6201	5322 130 34337	BAV99	7203	4822 209 16417	P83C380AER/016						
6202	4822 130 80446	BAS32L	7257	5322 130 60068	BC558C						
6203	4822 130 80446	BAS32L	7258	4822 130 44196	BC548C						
6204	4822 130 80446	BAS32L	7259	5322 130 42136	BC848C						
6205	4822 130 80446	BAS32L	7317	5322 130 42136	BC848C						
6206	4822 130 80446	BAS32L	7318	4822 130 41594	PH2369						
6207	4822 130 80446	BAS32L	7319	4822 130 41594	PH2369						
6220	4822 130 80446	BAS32L	7331	4822 209 15121	ST24LC21B1						
			7401	9352 608 03112	TD4A854V2						
6221	5322 130 31504	BZX79-B3V3	7409	4822 209 73852	PMBT2369						
6243	4822 130 80446	BAS32L	7416	5322 130 42136	BC848C						
6244	4822 130 80446	BAS32L	7417	4822 130 41344	BC337-40						
6255	4822 130 80446	BAS32L	7418	4822 130 40854	BC327						
6256	4822 130 30621	1N4148	7436	4822 130 44461	BC546B						
6317	4822 130 80446	BAS32L	7441	5322 130 42136	BC848C						
6318	4822 130 80446	BAS32L	7442	5322 130 60068	BC558C						
6401	4822 130 30621	1N4148	7452	4822 130 10829	MUN2211J						
6402	4822 130 30621	1N4148	7453	5322 130 60068	BC558C						
6403	4822 130 80446	BAS32L	7454	4822 130 41646	BF423						
6404	4822 130 30621	1N4148	7455	4822 130 41782	BF422						
6405	4822 130 80446	BAS32L	7456	5322 130 42136	BC848C						
6406	4822 130 80446	BAS32L	7501	4822 209 31472	TDA8179S						
6407	4822 130 80446	BAS32L		4822 492 62076	FOR						
6408	4822 130 30621	1N4148			TRANSISTORS						
6409	4822 130 80446	BAS32L		4822 466 11509	INSULATING						
6411	5322 130 81917	SB140			PLATE						
6436	4822 130 30621	1N4148		5322 390 20011	VET SILIC.P4						
6437	4822 130 34328	BZX79-B30			20GR						
6454	4822 130 34233	BZX79-B5V1	7518	4822 130 44196	BC548C						
			7525	4822 130 63081	BSN254A						
6455	4822 130 30621	1N4148	7526	4822 130 10811	2SC3998						
6501	5322 130 31969	RGP15M		4822 492 62076	FOR						
6519	4822 130 80446	BAS32L			TRANSISTORS						
6522	4822 130 42489	BYD33G		4822 466 93161	INSULATION						
6523	4822 130 31607	RGP10D			PLATE						
6524	5322 130 32184	BYV27-50		4822 466 11509	INSULATING						
6534	4822 130 10826	DD50R			PLATE						
6535	4822 130 34197	BZX79-B12		5322 390 20011	VET SILIC.P4						
6539	4822 130 11113	31DF4-FC5			20GR						
6542	4822 130 30621	1N4148	7540	4822 130 44121	BC338						
6548	4822 130 31607	RGP10D	7541	4822 130 44104	BC328						
			7542	5322 130 42136	BC848C						
6549	4822 130 31607	RGP10D	7543	4822 130 10788	MTP5P25						
6553	4822 130 60815	BYV26E		5322 390 20011	VET SILIC.P4						
6601	4822 130 31607	RGP10D			20GR						
6603	4822 130 80446	BAS32L	7550	4822 130 63274	2SC2344E						
6605	4822 130 80446	BAS32L	7551	4822 130 63275	2SA1011E						
6606	4822 130 80446	BAS32L	7555	4822 209 70672	LM358N SEL.						
6607	4822 130 30621	1N4148									
6608	4822 130 80446	BAS32L	7557	4822 130 63427	BD534FI						
6611	4822 130 34233	BZX79-B5V1	7558	5322 130 42631	BD243						
6613	4822 130 80446	BAS32L	7591	4822 209 70672	LM358N SEL.						
			7592	4822 130 41053	BC639						
6617	4822 130 80446	BAS32L	7593	4822 130 41087	BC638						
6618	4822 130 80446	BAS32L	7601	4822 209 33432	UC3842BN						
6620	4822 130 80446	BAS32L	7602	4822 209 70672	LM358N SEL.						

2724 4822 121 70162 10nF 5% 400V  
 2725 4822 121 70162 10nF 5% 400V  
 2726 4822 121 70162 10nF 5% 400V  
 2728 5322 122 33861 120pF 10% 50V  
 2729 5322 122 32531 100pF 5% 50V  
 2730 4822 121 70162 10nF 5% 400V  
 2731 4822 126 14122 6.8nF 10% 50V  
 2732 4822 124 80606 1μF 20% 160V

2733 4822 126 13196 100nF 10% **SMD**  
 25V  
 2735 4822 126 13196 100nF 10% **SMD**  
 25V  
 2739 5322 122 32531 100pF 5% 50V  
 2740 5322 122 32531 100pF 5% 50V  
 2741 4822 124 42171 22μF 25V  
 2742 4822 121 70162 10nF 5% 400V  
 2743 4822 126 14122 6.8nF 10% 50V  
 2744 4822 124 80606 1μF 20% 160V  
 2745 4822 124 41751 47μF 20% 50V  
 2746 4822 124 40433 47μF 20% 25V

2747 4822 121 43693 10nF 100V  
 2748 4822 124 41634 22μF ELEC 16V  
 2749 4822 126 13196 100nF 10% **SMD**  
 25V  
 2750 4822 124 12184 10UF 20% 16V

—II—

2751 4822 124 80131 100μF 20% 25V  
 2752 5322 122 32654 22nF 10% 63V  
 2753 5322 122 32654 22nF 10% 63V  
 2754 4822 126 13692 47pF 1% 63V  
 2755 4822 124 80131 100μF 20% 25V  
 2756 4822 124 40433 47μF 20% 25V  
 2757 5322 124 40641 10μF 20% 100V  
 2760 5322 122 32658 22pF 5% 50V  
 2761 5322 122 32658 22pF 5% 50V  
 2762 5322 122 32658 22pF 5% 50V

2763 5322 122 32658 22pF 5% 50V  
 2764 4822 122 33177 10nF 20% 50V  
 2765 4822 126 13692 47pF 1% 63V  
 2766 5322 122 32658 22pF 5% 50V  
 2767 4822 122 33646 470pF 10% 500V  
 2768 4822 126 13196 100nF 10% **SMD**  
 25V

2769 4822 126 13196 100nF 10% **SMD**  
 25V  
 2770 4822 126 13196 100nF 10% **SMD**  
 25V

2771 4822 121 43693 10nF 100V  
 2772 4822 122 33968 1nF 5% 500V

2773 4822 126 12267 470pF 10%R(HR)  
 2KV  
 2774 4822 126 14102 10nF 20% 2KV  
 2776 4822 126 13196 100nF 10% **SMD**  
 25V

2777 4822 252 60127 DSP-201M-C04F  
 2778 4822 126 13196 100nF 10% **SMD**  
 25V  
 2779 4822 252 60127 DSP-201M-C04F  
 2780 4822 252 60127 DSP-201M-C04F  
 2781 4822 126 13196 100nF 10% **SMD**  
 25V

2782 4822 124 42169 470μF 25V  
 2783 4822 124 41634 22μF ELEC 16V  
 2784 4822 122 33177 10nF 20% 50V

2785 4822 126 13196 100nF 10% **SMD**  
 25V  
 2786 4822 126 13196 100nF 10% **SMD**  
 25V

2787 4822 126 13196 100nF 10% **SMD**  
 25V  
 2788 4822 126 13196 100nF 10% **SMD**  
 25V

2789 4822 126 13196 100nF 10% **SMD**  
 25V  
 2790 4822 122 33177 10nF 20% 50V  
 2793 4822 126 13196 100nF 10% **SMD**  
 25V

2794 4822 126 13196 100nF 10% **SMD**  
 25V  
 2795 4822 126 13196 100nF 10% **SMD**  
 25V

2796 4822 126 13196 100nF 10% **SMD**  
 25V

2797 4822 126 13196 100nF 10% **SMD**  
 25V  
 2798 4822 124 42169 470μF 25V

—II—

3704 4822 117 11507 6k8 1% 0.1W  
 3706 4822 051 20104 100k 5% 0.1W  
 3707 4822 050 16802 6k8 1% 0.4W  
 3708 4822 051 20102 1k 5% 0.1W  
 3710 4822 117 11507 6k8 1% 0.1W

3711 4822 051 20105 1M 5% 0.1W  
 3712 4822 051 20101 100Ω 5% 0.1W  
 3713 4822 051 20008 0Ω JUMP. (SMD)  
 3714 4822 051 20008 0Ω JUMP. (SMD)  
 3715 4822 051 20008 0Ω JUMP. (SMD)

3716 4822 051 20101 100Ω 5% 0.1W  
 3717 4822 051 20101 100Ω 5% 0.1W  
 3718 4822 051 20101 100Ω 5% 0.1W  
 3719 4822 051 20105 1M 5% 0.1W  
 3721 4822 051 20479 47Ω 5% 0.1W  
 3722 4822 051 20479 47Ω 5% 0.1W  
 3723 4822 051 20479 47Ω 5% 0.1W  
 3724 4822 117 11503 220Ω 1% 0.1W  
 3725 4822 051 20101 100Ω 5% 0.1W  
 3726 4822 051 20101 100Ω 5% 0.1W

3727 4822 051 20101 100Ω 5% 0.1W  
 3728 4822 051 20101 100Ω 5% 0.1W  
 3729 4822 117 11139 1k5 1% 0.1W  
 3730 4822 117 10833 10k 1% 0.1W  
 3735 4822 117 11449 2k2 1% 0.1W  
 3736 4822 051 20331 330Ω 5% 0.1W  
 3737 4822 051 20223 22k 5% 0.1W  
 3739 4822 051 20101 100Ω 5% 0.1W  
 3740 4822 050 24709 47Ω 1% 0.6W  
 3741 4822 051 20201 200Ω 5% 0.1W

3742 4822 051 20223 22k 5% 0.1W  
 3743 4822 117 11507 6k8 1% 0.1W  
 3744 4822 051 20274 270k 5% 0.1W  
 3745 4822 051 20109 10Ω 5% 0.1W  
 3746 4822 051 20223 22k 5% 0.1W  
 3747 4822 051 20223 22k 5% 0.1W  
 3748 4822 050 21005 1M 1% 0.6W  
 3749 4822 117 11503 220Ω 1% 0.1W  
 3750 4822 117 11503 220Ω 1% 0.1W  
 3751 4822 051 20113 11k 5% 0.1W

3752 4822 111 50618 82Ω 10% 0.5W  
 3753 4822 051 20113 11k 5% 0.1W  
 3754 4822 051 20331 330Ω 5% 0.1W  
 3755 4822 051 20113 11k 5% 0.1W  
 3757 4822 051 20101 100Ω 5% 0.1W  
 3758 4822 051 20201 200Ω 5% 0.1W  
 3760 4822 051 20479 47Ω 5% 0.1W  
 3761 4822 117 11507 6k8 1% 0.1W  
 3762 4822 051 20274 270k 5% 0.1W  
 3763 4822 051 20109 10Ω 5% 0.1W

3765 4822 051 20223 22k 5% 0.1W  
 3766 4822 050 21005 1M 1% 0.6W  
 3767 4822 051 20223 22k 5% 0.1W  
 3768 4822 051 20223 22k 5% 0.1W  
 3769 4822 111 50618 82Ω 10% 0.5W  
 3770 4822 051 20339 33Ω 5% 0.1W  
 3771 4822 051 20339 33Ω 5% 0.1W  
 3772 4822 051 20331 330Ω 5% 0.1W  
 3773 4822 051 20339 33Ω 5% 0.1W  
 3775 4822 051 20101 100Ω 5% 0.1W

3776 4822 051 20201 200Ω 5% 0.1W  
 3778 4822 117 11507 6k8 1% 0.1W  
 3779 4822 051 20274 270k 5% 0.1W  
 3780 5322 116 51882 0Ω jumper FR25)  
 3781 4822 051 20109 10Ω 5% 0.1W  
 3784 4822 050 21005 1M 1% 0.6W  
 3785 4822 051 20105 1M 5% 0.1W  
 3786 4822 051 20102 1k 5% 0.1W  
 3787 4822 111 50618 82Ω 10% 0.5W  
 3788 4822 117 11503 220Ω 1% 0.1W

3789 4822 051 20102 1k 5% 0.1W  
 3790 4822 051 20479 47Ω 5% 0.1W  
 3791 4822 117 10833 10k 1% 0.1W  
 3792 4822 051 20472 4k7 5% 0.1W  
 3793 4822 051 20105 1M 5% 0.1W  
 3794 4822 051 20561 560Ω 5% 0.1W  
 3795 4822 051 20132 1k3 5% 0.1W  
 3796 4822 051 20562 5k6 5% 0.1W  
**SMD**

3797 4822 051 20332 3k3 5% 0.1W  
 3798 4822 051 20102 1k 5% 0.1W

3799 4822 051 20101 100Ω 5% 0.1W  
 3801 4822 051 20101 100Ω 5% 0.1W  
 3802 4822 051 20101 100Ω 5% 0.1W  
 3803 4822 117 12993 0Ω01 100% 0.4W  
 3804 4822 051 20102 1k 5% 0.1W  
 3805 4822 051 20102 1k 5% 0.1W  
 3811 4822 050 21502 1k5 1% 0.6W  
 3812 4822 116 80548 15k 5% 0.5W  
 3814 4822 051 20008 0Ω JUMP. (SMD)  
 3815 4822 051 20008 0Ω JUMP. (SMD)

3816 4822 051 20008 0Ω JUMP. (SMD)  
 3819 4822 051 20331 330Ω 5% 0.1W  
 3821 4822 051 20331 330Ω 5% 0.1W  
 3823 4822 051 20331 330Ω 5% 0.1W

—II—

5702 4822 157 53519 IND FXD SP0406 A

5703 4822 152 20596 100U PM10 B  
 IND FXD SP0305 A  
 4U7 PM10 B  
 5704 4822 152 20596 IND FXD SP0305 A  
 4U7 PM10 B  
 5705 4822 152 20596 IND FXD SP0305 A  
 4U7 PM10 B  
 5706 3138 128 78040 COIL 0.15μH 10%  
 5707 3138 128 78040 COIL 0.15μH 10%  
 5708 3138 128 78040 COIL 0.15μH 10%  
 5709 4822 157 53189 CHOKE COIL  
 5.0μH PM10  
 5711 4822 152 20596 IND FXD SP0305 A  
 4U7 PM10 B  
 5712 4822 152 20596 IND FXD SP0305 A  
 4U7 PM10 B  
 5713 4822 152 20596 IND FXD SP0305 A  
 4U7 PM10 B

—II—

6702 4822 130 34382 BZX79-B8V2  
 6708 4822 130 42489 BYD33G  
 6709 4822 130 31878 1N4003G  
 6710 4822 130 80877 BAV103  
 6711 4822 130 80877 BAV103  
 6712 4822 130 80877 BAV103

—II—

7701 4822 209 16419 M52742SP  
 7702 4822 209 16103 LXC4389P1  
 7703 5322 209 11473 74HCT86N  
 7707 4822 209 16422 CVA4403  
 7708 4822 209 15329 CR6927  
 5322 390 20011 VET SILIC.P4  
 20GR  
 7709 4822 130 11231 CVA4502N  
 7725 5322 130 42136 BC848C  
 7727 5322 209 85913 MC7912CT  
 4822 526 10544 FERRITE BEAD  
 TR-3.5X1.3X6

## 1163 Encoder Panel

### Various

1163 3138 128 63700 ENCODER PCB  
 ASSY  
 1247 4822 273 10348 ENCODER  
 1248 4822 276 13949 TACT SWITCH

—II—

6291 4822 130 83789 L-59GYC  
 3138 178 72510 CON. 8 PIN WIRE  
 HARNESS

## 1164 Switch Panel

### Various

1164 4822 212 11701 DC SWITCH PCB  
 ASSY  
 1199 4822 276 13886 SWITCH 2P PUSH  
 BUTTON

## **The Introduction of CM5800, 21"** **Monitor**

- 0. Functional Block Diagram**
- 1. General Description**
- 2. Description of Circuit Diagram**
  - A.Power Supply / Power Saving Management**
  - B.Horizontal / Vertical Deflection**
  - C.Video board & DDC 1/2B**
  - D.Digital Circuit & Micro-controller**

### **1.GENERAL DESCRIPTION**

The CM5800, 21" is a Digital Controlled Auto-scan Color Display Monitor with high resolution. This monitor can operate at horizontal scan frequencies from 30 to 115 kHz and vertical scan frequencies from 50 to 160 Hz.

This monitor is equipped with an embedded micro-controller which can preset the required modes. The CM5800 provides many functions, such as digital adjustable picture, DDC1/2B, power management, low emission, high immunity ,etc.

This monitor complies with TCO low emission standard and also fulfills TCO'91 automatic power saving requirements. To reduce power consumption less than 15 watts in standby or suspend mode and less than 5 watts in off mod, the monitor also complies with energy star computer program initiated by the EPA.

### **2.DESRIPTION OF CIRCUIT DIAGRAM**

This description mainly introduces the functions, including power supply / power saving management, horizontal / vertical deflection, video amplifier, micro-controller, etc.

#### **A.POWER SUPPLY / POWER SAVING MANAGEMENT**

##### ***POWER SUPPLY:***

This monitor is designed as switch mode power supply which can operate mains input from 90 VAC to 264 VAC . The power supply uses an IC(L4990 ) for current mode PWM controller and drives the MOSFET switch directly. The control scheme transforms a switching converter from a voltage source into a multi-output voltage. The control concept is exhibited many desirable properties such as inherent over-load protection, stable and fast system response.

The maximum power consumption is up to 160 watts. A power limiting circuit is added for safety reason.

On main power supply circuit, secondary feedback via an photo-coupler is used to obtain a stable output voltage. The secondary feedback supplies all necessary voltages for deflection and video. On second power supply, voltage stabilizer IC is used to supply the small signals and micro-controller/EEPROM.

## CM5800 21A BRIEF

### *POWER SAVING MANAGEMENT:*

This monitor can save power consumption while no sync pulses are detected by micro-controller and automatically recover to normal power when sync signals are detected by micro-controller.

During power saving mode, the second power supply still delivers 5V to  $\mu$ c. The consume power is less than 15 watts during standby / suspend modes, and less than 5 watts during off mode.

### B.HORIZONTAL / VERTICAL DEFLECTION

#### *HORIZONTAL DEFLECTION:*

The heart of horizontal/vertical deflection controller is TDA4854 which can offer a complete and efficient small signal sync processing for auto-sync monitors. All functions are controlled by I2C bus.

This controller provides sync processing, which can accept separate, composite (H+V) and sync-on-video input signals. A very short setting time after mode change for protection of external power components has been taken.

The TDA4854 provides extensive functions like a flexible SMPS block and a geometry control with facilities, leading to excellent picture quality. This device also can directly drive the vertical deflection output stage, the line driver stage, the E/W output stage and the EHT stage. All controls are dc and tracked with the incoming frequencies.

The horizontal deflection is built around the buck converter which makes it possible to combine H-deflection and EHT generator and allows size and E/W correction without influencing EHT. Raster can be adjusted along horizontal direction by VR3551.

Transformer (LOT) generates the required 26.8kV anode voltage.

The adjustable focus (G3) and screen (G2) voltages are internally derived from the anode voltage. Other secondary windings are used to generate the voltages for G1. For 21 inch monitor also provides dynamic focus on G4 to get a good focus performance.(G4 also adjustable).

To guarantee constant EHT over the whole frequency range, the B+ is made tracked with H-frequency by means of a step down converter.

The horizontal size and east/west correction are obtained by varying the voltage of buck converter of the lower deflection a circuit.

Six-capacitors switch and dc controlled linearity coil are designed for optimal screen linearity.

For safety reasons, x-ray protection circuit is included, UC3842 will shut down EHT generator if the anode voltage exceeds a certain value(28.5kV).

This circuit is also used for beam current overload protection. Shut down EHT in case the total beam current exceeds a certain limit to protect both CRT and LOT.

## *VERTICAL DEFLECTION:*

The majority of vertical deflection functions is integrated by two ICs ; TDA4854 and TDA8177.

The TDA4854 takes care of sync polarity correction ,automatic catching and holding of the vertical oscillator ,generation of saw-tooth drive current for vertical output and vertical s-correction ,and generation of a correct V-blanking pulse for video blanking during vertical retrace lines.

The TDA8177 which is a dc-coupled vertical deflection booster with differential input signals is suitable for color monitor. The output stage has thermal and soar protection ,and high linear saw-tooth signal amplification to obtain the required vertical deflection current.

To obtain a fast vertical retrace for non-VGA mode an external flyback supply is used.

## *C.VIDEO AMPLIFIER & DDC 1/2B*

### *VIDEO AMPLIFIER:*

The heart of video circuit is M52742SP. This controller can drive the hybrid post-amp. CR6927 by buffer stage. The video DC level and gain at the cathode will be controlled by the software.

The red , green and blue video signals are amplified and inverted by the post-amplifier to output stage and AC coupled to the CRT cathodes.

Three cut-off adjustments are provided to set the video black level at cathode for all three guns. Also three individual gain adjustments are provided to adjust the white point at maximum swing. Both cut-off and gain controls are digit type control by micro-processor.

For limiting the beam current and preventing the local doming ,the beam current limit will automatically reduce the video swing in case the maximum beam current is exceeded.(ABL adjustment:R3647)

A spot-killer circuit is also added to prevent the CRT spot burn-in when the set is switched off.

### *DDC 1/2B:*

Via SDA, the data about the information of the monitor , including the serial number , production codes ,CRT type and applicable timings are stored in the EEPROM (24IC21). To avoid picture interference ,the reading and writing processes are executed during vertical blanking which is informed by the vertical SYNC.

## *D.MICROCONTROLLER*

### *GENERAL DESCRIPTION:*

The Philips P87C380 u-processor is used to control the monitor. The preset data are stored in EEPROM ST24W08.

*HARDWARE DEFINITION:*

## a)KEY BOARD

There are one key pad and one rotary encoder at the front of monitor for the OSD control.

## - OSD function key:

Push it, to confirm the entrance or exit from the OSD window

## - Encoder:

To select or adjust the parameters which are chosen from OSD.

## b)OSD will DISAPPEAR and save automatically after non-operation

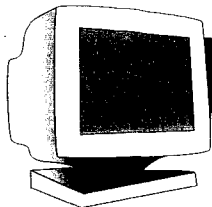
## c) Software will control the DPMS according to the SYNC status.

## d)VIDEO PRESET MODES

**Pre-set Video Resolution and Sync Polarities**

Resolution modes	H frequency	V frequency	H	V
640 x 400	31.5K	70Hz (VGA)	-	+
640 x 480	31.5K	60Hz (VGA)	-	-
640 x 480	37.5K	75Hz (VESA/75)	-	-
800 x 600	46.9K	75Hz (VESA/75)	+	+
800 x 600	53.7K	85Hz (VESA/85)	+	+
1024 x 768	60.0K	75Hz (VESA/75)	+	+
1024 x 768	68.7K	85Hz (VESA/85)	+	+
1152 x 870	69.0K	75Hz (MAC)	-	-
1152 x 900	71.8K	76Hz (SUN SPARC)	+	+
1280 x 1024	80.0K	75Hz (VESA/75)	+	+
1280 x 1024	91.0K	85Hz (VESA/85)	+	+
1600 x 1200	106.3K	85Hz (VESA/85)	+	+
1800 x 1350	105.45K	75Hz	+	+
1600 x 1200	112.5K	90Hz	+	+
1800 x 1440	112.5K	75Hz	+	+





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21B582BH

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BECAUSE OF A POLICY OF CONTINUOUS PRODUCT IMPROVEMENT,  
THE INFORMATION MENTIONED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.

# Setting Up your Philips monitor

Installation de votre moniteur Philips.

Configuración de su monitor Philips.

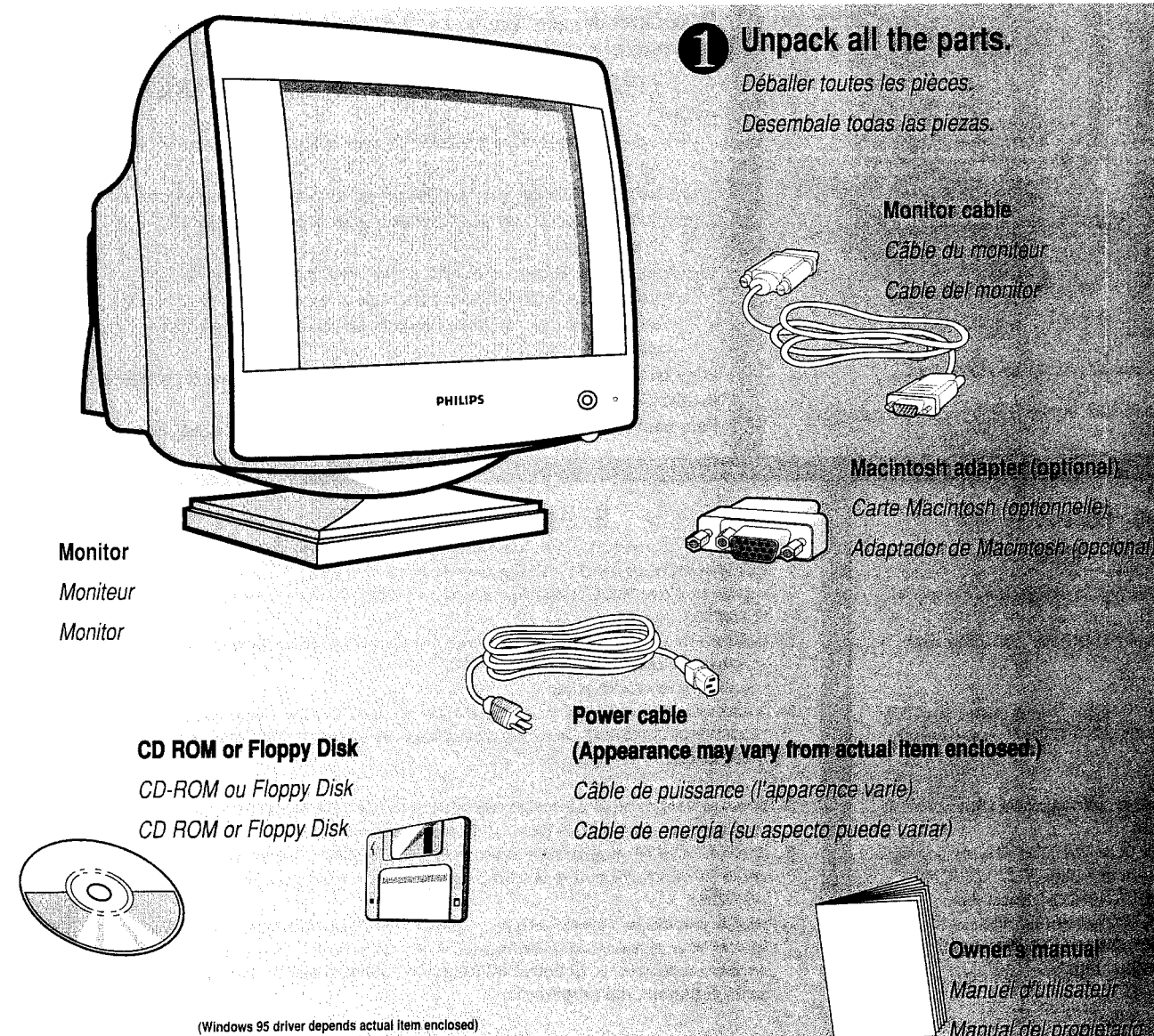
This foldout is designed to help you use your monitor as soon as possible. Refer to your owner's manual for detailed information. You may also contact us at our web site: <http://www.monitors.be.philips.com>

Ce dépliant est conçu pour vous aider à utiliser votre moniteur du plus vite possible. Consulter votre manuel d'utilisateur pour des informations détaillées. Vous pouvez aussi nous contacter sur notre site Web: <http://www.monitors.be.philips.com>

Esta hoja plegable está diseñada para ayudarle a usar su monitor tan pronto como sea posible. Consulte su manual si desea información detallada. También puede comunicarse con nosotros a través de nuestra página web: <http://www.monitors.be.philips.com>

Because of a policy continuous product improvement, the information mentioned by this documents are subject to change without notice.

Du fait de notre politique d'amélioration constante de nos produits, les spécifications ci-dessus sont sujettes à modification sans avis préalable. En el marco de la política de mejora continuada de nuestros productos, las especificaciones arriba indicadas están sujetas a cambio sin previo aviso.

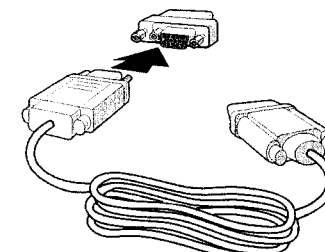


To hook up your monitor to a Macintosh-type computer, follow the steps below. To hook up your monitor to an IBM-compatible computer, follow step 1, then turn over this foldout. In either case, before installing this monitor, please refer to the user's guide of your computer and video adapter to see if this equipment needs any additional setting.

Suivre les étapes suivantes pour connecter votre moniteur à un ordinateur du type Macintosh. Pour connecter votre moniteur à un ordinateur compatible IBM, suivre la première étape, puis tourner ce dépliant. En tout cas, avant l'installation de votre moniteur, veuillez vous référer au manuel d'utilisateur de votre ordinateur et carte vidéo pour voir si cet équipement a besoin d'installation supplémentaire.

Para conectar su monitor a un ordenador tipo Macintosh, siga los pasos que se presentan a continuación. Para conectar su monitor a un ordenador compatible con IBM, siga el paso 1, luego voltee esta página. En ambos casos, antes de instalar este monitor, consulte la guía del usuario de su ordenador y de su adaptador de vídeo, para comprobar si este equipo necesita alguna configuración adicional.

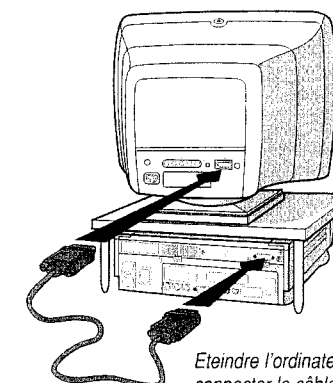
**2** **Connect the special Mac adapter (May not be included.) to one end of the monitor cable.**



*Connecter la carte spéciale Mac (pas toujours incluse) à une extrémité du câble du moniteur.*

*Conecte el adaptador especial de Mac (puede no estar incluido) a un extremo del cable del monitor.*

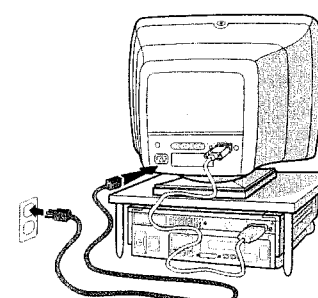
**3** **Turn off the computer. Then connect the monitor cable.**



*Eteindre l'ordinateur, puis connecter le câble du moniteur.*

*Apague el ordenador. Luego conecte el cable del monitor.*

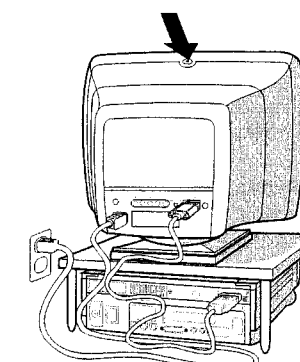
**4** **Connect the power cable. Make sure the power plug and the wall socket are easily accessible.**



*Connecter le câble de puissance. S'assurer que la fiche secteur et la prise murale soient facilement accessibles.*

*Conecte el cable de energía. Verifique que se pueda acceder fácilmente al tomacorriente y al enchufe de pared.*

**5** **Turn on the monitor. Then turn on the computer.**



*Allumer le moniteur, puis l'ordinateur.*

*Encienda el monitor. Luego encienda el ordenador.*

# Setting Up *your Philips monitor*

Installation de votre moniteur Philips.

Configuración de su monitor Philips.

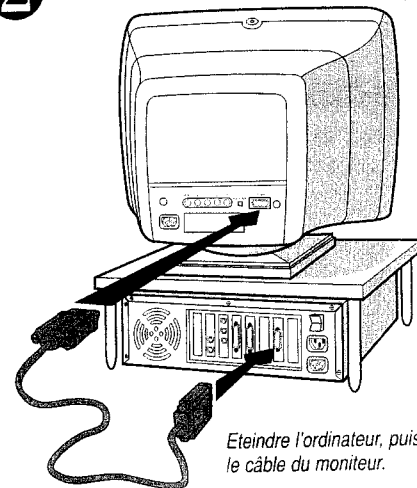
IBM-compatible computer hookup continued from step 1 on other side.

Connecter l'ordinateur compatible IBM, suite de la première étape de l'autre côté.

Conexión del ordenador compatible con IBM (continuación del paso 1 del otro lado de la página).

Monitor Model for Windows'95 Driver:  
Philips Brilliance 201P (Product ID: 21A58...)  
Philips Brilliance 201B (Product ID: 21B58...)

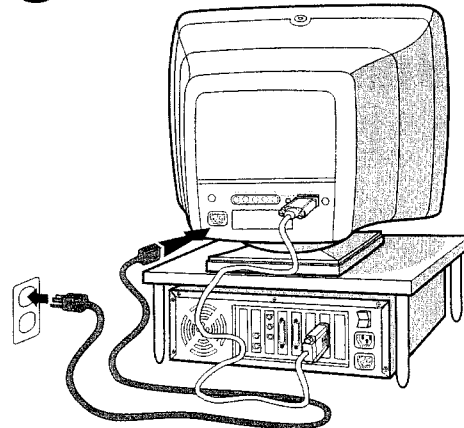
## 2 Turn off the computer. Then connect the monitor cable.



Eteindre l'ordinateur, puis connecter le câble du moniteur.

Apague el ordenador. Luego conecte el cable del monitor.

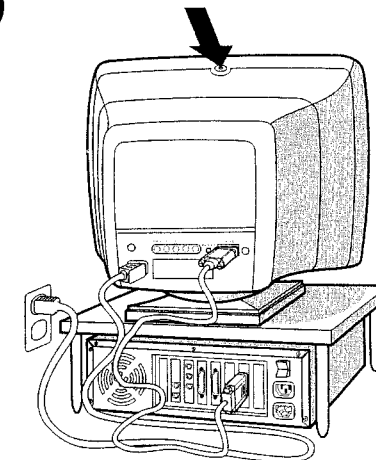
## 3 Connect the power cable. Make sure the power plug and the wall socket are easily accessible.



Connecter le câble de puissance. S'assurer que la fiche secteur et la prise murale soient facilement accessibles.

Conecte el cable de energía. Verifique que se pueda acceder fácilmente al tomacorriente y al enchufe de pared.

## 4 Turn on the monitor. Then turn on the computer.



Allumer le moniteur, puis l'ordinateur.

Encienda el monitor. Luego encienda el ordenador.

### If you have Windows '95 . . .

follow these steps to complete setting up your monitor.

1. Start Windows '95 and install CD ROM supplied with this monitor.
2. Click on the "START" icon. Next, click on the "SETTINGS" icon. Then click on "CONTROL PANEL."
3. Double-click on "DISPLAY" icon. Next, click on "SETTINGS" tab. Then click on "ADVANCED PROPERTIES" dialog box.
4. Click on "MONITOR" tab.
- 5a. If you have an old computer, click on "CHANGE" dialog box. Next, "SELECT DEVICE" screen appears. Now click on "HAVE DISK" dialog box. and select CD-ROM drive  
Or
- 5b. If you have a new computer, "SELECT DEVICE" screen automatically appears. Click on "HAVE DISK" dialog box and select CD-ROM drive.
6. Select "OK" in the "INSTALL FROM DISK" dialog box. If model name of the Philips monitor is correct, click "OK" tab in the "SELECT DEVICE" dialog box.
7. Click "CLOSE" tab in the "ADVANCED PROPERTIES" dialog box. If your Windows '95 version is different or you need more detailed installation information, please refer to the Windows '95 user's manual. **For additional information on the monitor, please refer to the owner's manual.**

### Si vous avez Windows '95 . . .

suivez les étapes suivantes pour terminer l'installation de votre moniteur.

1. Démarrer Windows 95 et installer le CD-ROM fourni avec votre moniteur.
2. Cliquer sur l'icône "DÉMARRER", ensuite, cliquer sur l'icône "PARAMETRES", puis cliquer sur l'icône "PANEAU DE CONFIGURATION".
3. Cliquer deux fois sur l'icône "AFFICHER", ensuite cliquer sur l'onglet "PARAMETRES", puis cliquer sur la boîte de dialogue "PROPRIETES AVANCEES".
4. Cliquer sur l'onglet "MONITEUR".
- 5a. Si vous avez un ancien ordinateur, cliquer sur la boîte de dialogue "CHANGER", ensuite l'écran "SELECTIONNER UNITE" apparaît. Maintenant cliquer sur la boîte de dialogue "DISQUETTE FOURNIE", et sélectionner le lecteur CD-ROM.  
ou
- 5b. Si vous avez un ordinateur récent, l'écran "SELECTIONNER UNITE" apparaît automatiquement. Cliquer sur la boîte de dialogue "DISQUETTE FOURNIE" et sélectionner le lecteur CD-ROM.
6. Sélectionner "OK" dans la boîte de dialogue "INSTALLER A PARTIR DE LA DISQUETTE". Si le nom du modèle de moniteur Philips est correct, cliquer sur l'onglet "OK" dans la boîte de dialogue "SELECTIONNER UNITE".
7. Cliquer sur l'onglet "FERMER" dans la boîte de dialogue "PROPRIETES AVANCEES". Si votre version Windows 95 est différente ou si vous voulez des informations plus détaillées sur l'installation, veuillez vous référer au manuel d'utilisateur de Windows 95. **Pour des informations complémentaires sur le moniteur, veuillez vous référer au manuel d'utilisateur.**

### WHAT TO DO IF YOUR MONITOR ISN'T WORKING

Make sure . . .

- . . . the Power cable is plugged in the wall and the rear of the monitor.
- . . . the Power button on top of the monitor should be in the ON position.
- . . . the monitor cable is properly connected to the back of the monitor and the computer.
- . . . to check to see if the monitor cable has bent pins.
- . . . the D-Sub/BNC switch on the rear of the monitor is in the correct position. See pages 2 and 17 of the owner's manual for details.

See page 20 of the owner's manual for troubleshooting tips.

For warranty questions, please see your owner's manual.

### QUE FAIRE SI VOTRE MONITEUR NE MARCHE PAS

S'assurer . . .

- . . . que le câble de puissance soit branché dans le mur et à l'arrière du moniteur.
- . . . que le bouton Marche/Arrêt au dessus de votre moniteur soit sur MARCHE.
- . . . que le câble du moniteur soit bien connecté à l'arrière du moniteur et de l'ordinateur.
- . . . de vérifier que le câble du moniteur n'ait pas de fiches tordues.
- . . . que l'interrupteur D-Sub/BNC à l'arrière du moniteur soit en position correcte. Voir page 24 et 39 de votre manuel d'utilisateur pour plus de détails.

Voir page 42 du manuel d'utilisateur pour des conseils de dépannage.

Si vous avez des questions concernant la garantie, veuillez consulter votre manuel d'utilisateur.

### ¿QUÉ HACER SI SU MONITOR NO FUNCIONA?

Verifique . . .

- . . . si el cable de energía está enchufado a la fuente de energía y a la parte posterior del monitor.
- . . . si el botón de alimentación en la parte superior del monitor está en la posición ON.
- . . . si el cable del monitor está debidamente conectado a la parte posterior del monitor y del ordenador.
- . . . que las clavijas del cable del monitor no estén dobladas.
- . . . que el interruptor D-Sub/BNC en la parte posterior del monitor esté en la posición correcta. Si desea más detalles, consulte las páginas 46 y 61 del manual del propietario.

En la página 64 del manual del propietario encontrará consejos sobre la localización de fallas.

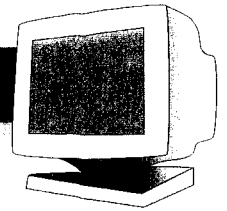
Para consultas sobre la garantía, consulte el manual del propietario.

### Si tiene Windows '95 . . .

siga estos pasos para finalizar la configuración de su monitor.

1. Inicie Windows '95 e instale el CD ROM que se suministra con su monitor.
2. Haga clic en el icono "INICIO". Luego haga clic en el icono "CONFIGURACIÓN". Luego haga clic en "PANEL DE CONTROL".
3. Haga doble clic en el icono "PANTALLA". A continuación haga clic en la etiqueta "CONFIGURACIÓN" y luego en el cuadro de diálogo "PROPIEDADES AVANZADAS".
4. Haga clic en la etiqueta "MONITOR".
- 5a. Si usted tiene un ordenador viejo, haga clic en el cuadro de diálogo "CAMBIAR". Luego aparece la pantalla "SELECCIÓN DE DISPOSITIVO". Ahora haga clic en el cuadro de diálogo "UTILIZAR DISCO" y seleccione la unidad CD-ROM.  
o
- 5b. Si tiene un ordenador nuevo, aparece automáticamente la pantalla "SELECCIONAR DISPOSITIVO". Haga clic en el cuadro de diálogo "UTILIZAR DISCO" y seleccione la unidad CD-ROM.
6. Seleccione "ACEPTAR" en el cuadro de diálogo "INSTALAR DESDE DISCO". Si el nombre del modelo del monitor Philips está correcto, haga clic en la etiqueta "ACEPTAR" del cuadro de diálogo "SELECCIÓN DE DISPOSITIVO".
7. Haga clic en la etiqueta "CERRAR" del cuadro de diálogo "PROPIEDADES AVANZADAS". Si su versión de Windows '95 es diferente o necesita información más detallada acerca de la instalación, consulte el manual del usuario de Windows '95. **Si desea información adicional acerca del monitor, consulte el manual del propietario.**

## INTRODUCTION AND SAFETY



### Introduction

The Philips Brilliance 201P/201B color monitor displays sharp and brilliant images of text and graphics with a maximum resolution of 1800x1440(201P), 1800x1350(201B) pixels. It is optimal for Windows, CAD / CAM / CAE, desktop publishing, spread sheets, multi-media, and any other application that demands a large screen size and high resolutions.

The monitor automatically scans horizontal frequencies from 30KHz to 115KHz(201P), 107KHz(201B), and vertical frequencies from 50Hz to 160Hz. With microprocessor-based digital-controlled circuitry and On-Screen Display (OSD) controls, the monitor can automatically adjust itself to the video card's scanning frequency and displays an image with the precise parameters you desire.

### Features

- An anti-glare, anti-static, and anti-reflection high-contrast screen coating eliminates any bad effects caused by room light reflecting on and dust attracted to the screen's surface.
- With the Color Adjustment feature, you can easily choose different preset color temperatures or set your own customized color parameters.
- The Image Tilt Adjustment feature corrects a rotated image. This correction minimizes the distortions caused by elements such as the Earth's magnetic field.
- The full-size feature expands the image on the monitor to fill the screen when used in factory preset modes.

- USB Bay at back of monitor is prepared for the Universal Serial Bus hub. You can easily and flexibly connect USB-designed devices – such as a mouse or keyboard – to the monitor for true Plug-and-Play function. USB hub sold separately (optional).

- Green Design – including automatic power saving function (NUTEK) and low-emission compliance (TCO '95) – shows your commitment to the environment.
- DDC1/DDC2B allows communication between the monitor and the PC for optimal video configuration.
- New CrystalClear technology for sharpest high brightness and high contrast
- Moire Cancellation eliminates diffraction, a fringe pattern in the picture.

**NOTE:** Your monitor operates according to the VESA DDC level 1/2B. Only computers that support the same guidelines and operate at the same or a higher level can make use of this feature. If your computer does not support the relevant guidelines, you can still use your monitor and computer. However, you may need to manually specify the appropriate resolution in the computer.

As an Energy Star Partner, Philips has determined that this product meets the Energy Star guidelines for energy efficiency.



Contact us at our web site: <http://www.monitors.be.philips.com>

### Safety precautions and maintenance

- Unplug the monitor, if you are not going to use it for an extended period of time.
- Unplug the monitor, if you need to clean it with a slightly damp cloth. Wiping the screen with a dry cloth is okay when the power is off. However, never use alcohol or ammonia-based liquids.
- Consult a service technician if the monitor does not operate normally when following the instructions in this manual.
- The back cover should be removed only by qualified service personnel.
- Keep the monitor out of direct sunlight and away from stoves or any other heat source.
- The top of the monitor is not a shelf. Remove any object that could fall into the vents or prevent proper cooling of the monitor's electronics.

- Keep the monitor dry. To avoid electric shock, do not expose it to rain or excessive moisture.
- Keep the monitor away from magnetic objects, such as speakers, electric motors, transformers, etc.
- When positioning the monitor, make sure the power plug and outlet are easily accessible.

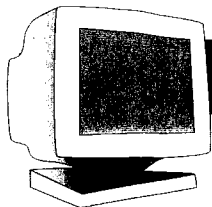
### End-of-life disposal

Your new monitor contains materials that can be recycled and reused. Specialized companies can recycle your product to increase the amount of reusable materials and minimize the amount to be disposed of.

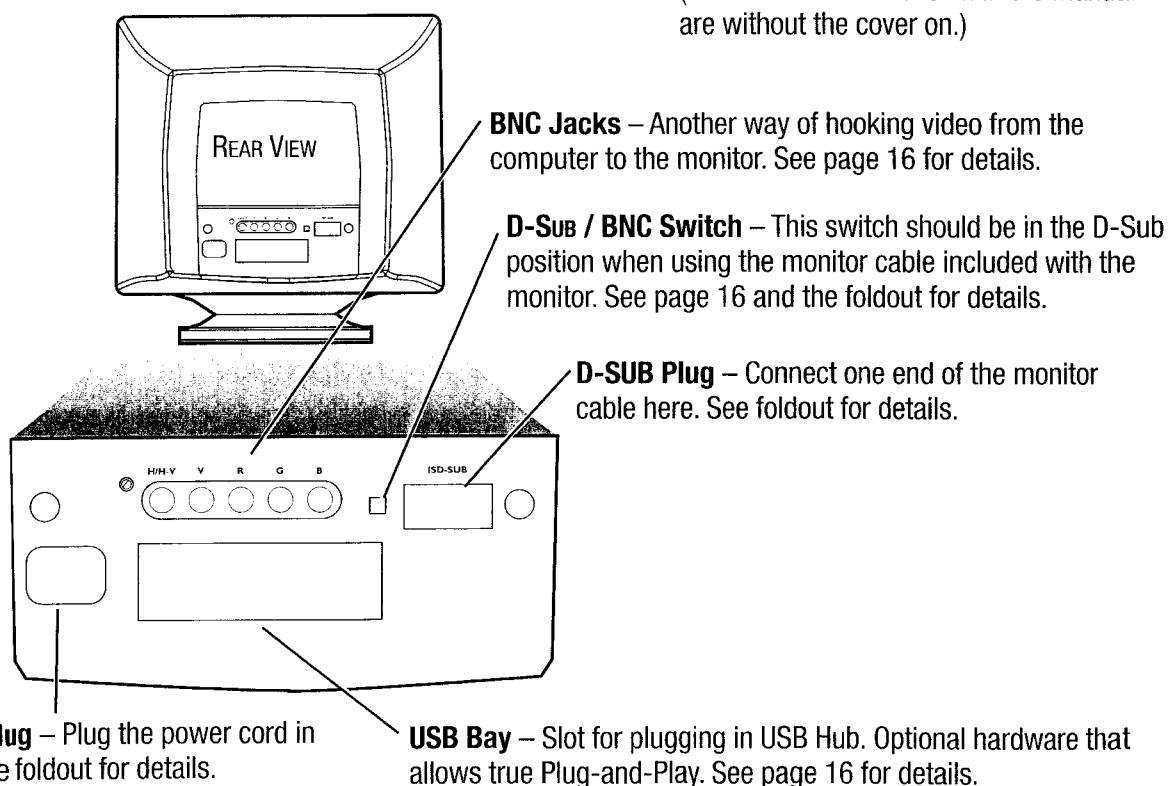
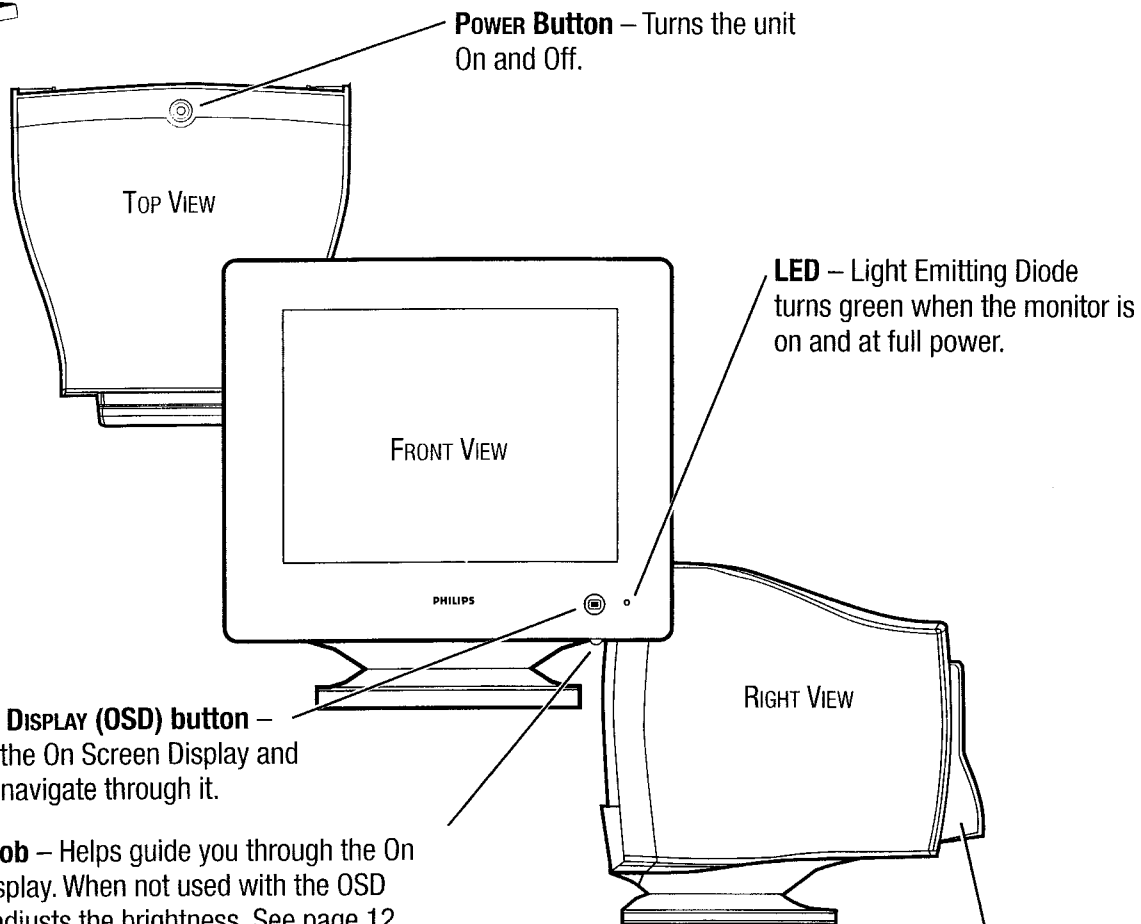
Please find out about the local regulations on how to dispose of your old monitor.

ENERGY STAR is an U.S. registered mark.

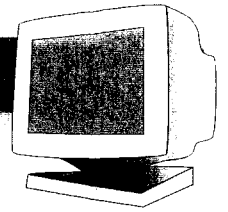
As an energy star partner, Philips has determined that this product meets the energy star guidelines for energy efficiency. IBM, IBM PC, and Power PC are registered trademarks of International Business Machines Corporation. Apple, Macintosh, Quadra, Performa, and Centris are registered trademarks of Apple Computer, Inc.



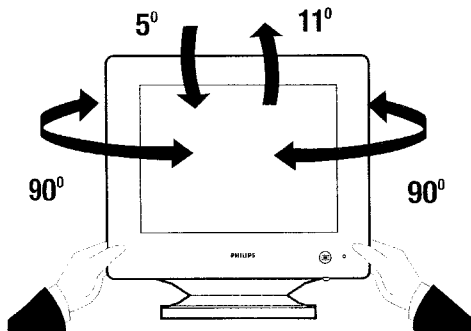
## DESCRIPTION OF CONTROLS



## DESCRIPTION OF CONTROLS

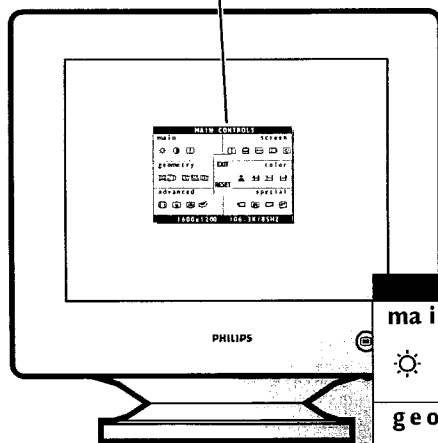


### PEDESTAL



**PEDESTAL** – With the built-in pedestal, you can tilt and swivel the monitor to the most comfortable viewing angle. To best use your monitor, always place it at eye level.

**ON SCREEN DISPLAY** – Your monitor is preset at the factory. However, you can adjust it using the ON SCREEN DISPLAY button and the ROTARY knob described on page 2. The way to do so is through the On Screen Display (OSD). Below is a brief description of the six On Screen Display windows.



**MAIN CONTROLS** – The first window highlighted after the OSD has been selected. It has four features: BRIGHTNESS, CONTRAST and DEGAUSS. To adjust these features, turn to pages 4 - 5.

**SCREEN SIZE & POSITION** – The second window highlighted after the OSD has been selected. It has five features: FULL SIZE, HORIZONTAL POSITION, HORIZONTAL SIZE, VERTICAL POSITION, and VERTICAL SIZE. To adjust these features, turn to pages 6 - 7.

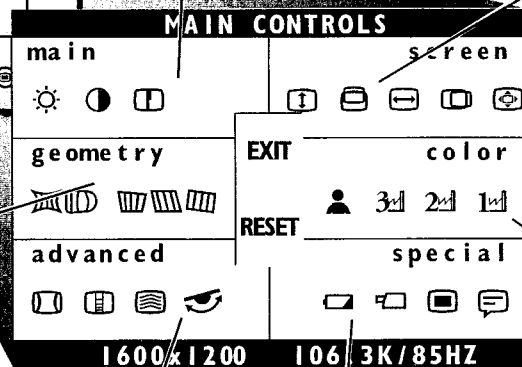
**COLOR TEMPERATURE** – The third window highlighted after the OSD has been selected. It has four features: CAD/CAM, DTP, PHOTO RETOUCH, and USER PRESETS. To adjust these features, turn to pages 8 - 9.

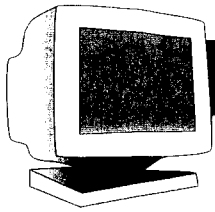
**GEOMETRY CONTROLS** – The sixth window highlighted after the OSD has been selected. It has five features: PINCUSHION, BALANCED PINCUSHION, TRAPEZOID, PARALLELOGRAM, and ROTATION. To adjust these features, turn to page 14.

**ADVANCED CONTROLS** – The fifth window highlighted after the OSD has been selected. It has four features: CORNER CORRECTION, VERTICAL LINEARTY, MOIRE, and ROTARY DEFAULT. To adjust these features, turn to page 12.

**SPECIAL CONTROLS** – The fourth window highlighted after the OSD has been selected. It has four features: LANGUAGE, OSD CONTROLS, VIDEO INPUT AND POWER SAVING. To adjust these features, turn to pages 10 - 11.

*Note: LANGUAGE allows you to change the On Screen Display from English to French, Spanish, German, or Italian. See page 10 for details.*




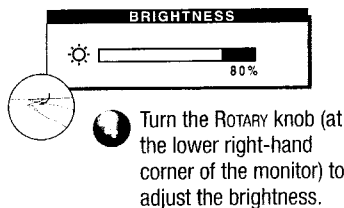
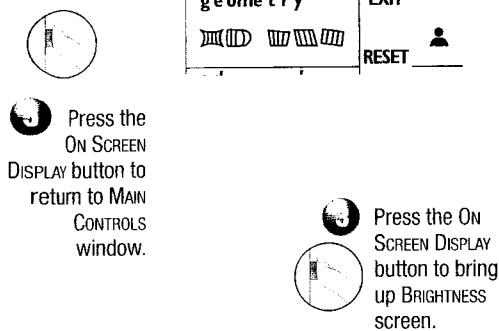
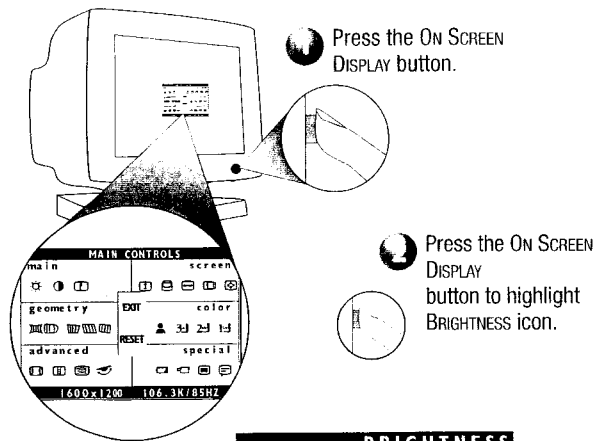


# HOW TO USE THE ON SCREEN DISPLAY (OSD)


## MAIN CONTROLS WINDOW

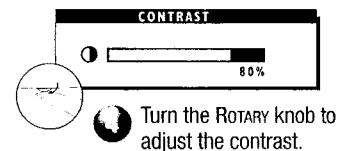
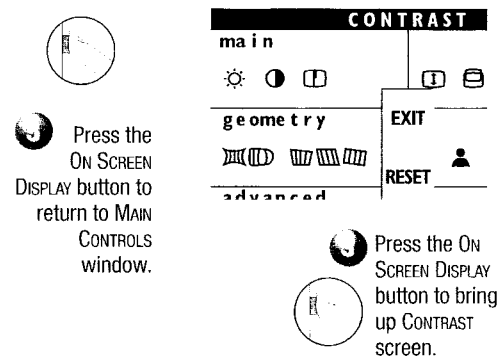
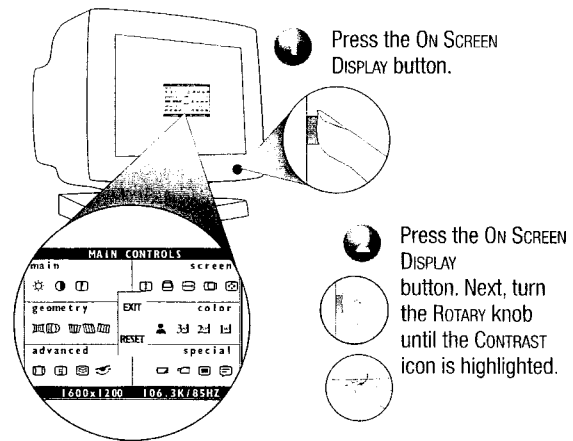
### BRIGHTNESS

 To adjust your screen's brightness, follow the steps below. Brightness is the overall intensity of the light coming from the screen. A 50% brightness level is recommended.



### CONTRAST

 To adjust your screen's contrast, follow the steps below. Contrast is the difference between the light and dark areas on the screen. A 100% contrast level is recommended.



#### SMART HELP

##### After returning to MAIN CONTROLS ...

... to continue to CONTRAST, turn the ROTARY knob until CONTRAST icon is highlighted. Next, follow steps 3 - 5 under CONTRAST.

... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

#### SMART HELP

##### After returning to MAIN CONTROLS ...

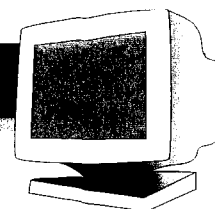
... to continue to DEGAUSS, turn the ROTARY knob until DEGAUSS icon is highlighted. Next, follow steps 2-3 under DEGAUSS (on the next page).

... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)



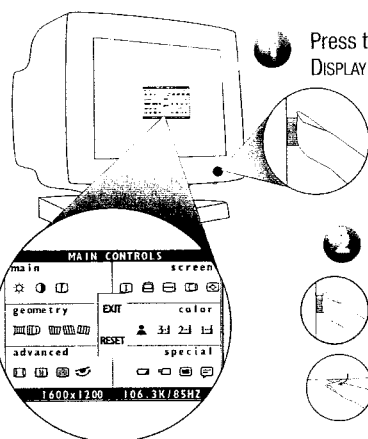
# HOW TO USE THE ON SCREEN DISPLAY (OSD)

## MAIN CONTROLS WINDOW



### DEGAUSS

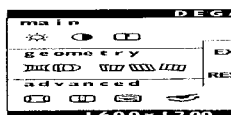
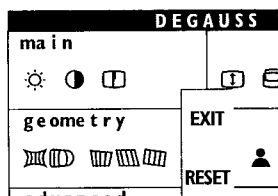
**D** To degauss your screen, follow the steps below. Degaussing removes electromagnetic build up that may distort the color on your screen.



Press the On SCREEN DISPLAY button.

Press the On SCREEN DISPLAY button. Next, turn the ROTARY knob until the DEGAUSS icon is highlighted.

For a moment, the screen will be distorted. Then it will return to normal. You will be back at the MAIN CONTROLS window.



Press the On SCREEN DISPLAY button to degauss your screen.

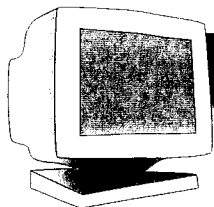
### SMART HELP

#### After returning to MAIN CONTROLS ...

... to continue to the SCREEN SIZE & POSITION window, turn the ROTARY knob until EXIT is highlighted. Next, press the OSD button. Turn to the next page and follow steps 2 - 5 under FULL SIZE.

... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)




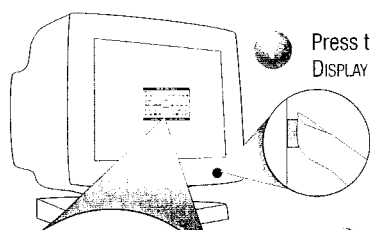


# HOW TO USE THE ON SCREEN DISPLAY (OSD)

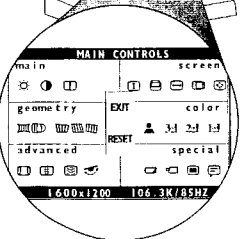
## SCREEN SIZE & POSITION WINDOW

### FULL SIZE

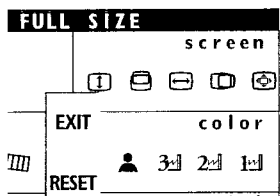
 Full Size allows you to adjust the image on your screen to its maximum height and width. If nothing happens when you use this feature, the image is already at full size. You can use Full Size to both enable and disable this feature. *Note: Full Size only works with the monitor's factory presets.*



Press the On Screen Display button.

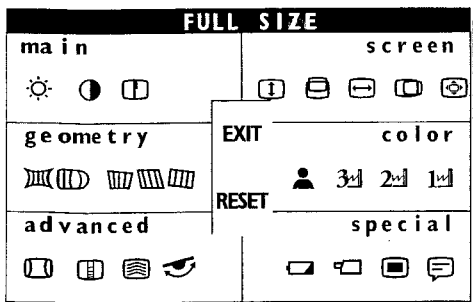


Turn the ROTARY knob until the SCREEN SIZE & POSITION window is highlighted. Next, press the On Screen Display button. The FULL SIZE icon is highlighted.




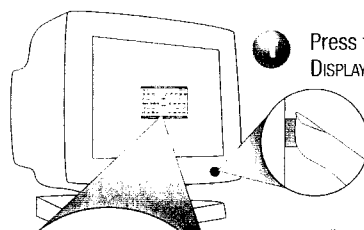
The image will automatically adjust to full size. You can now go on to your next adjustment.

Press the On Screen Display button.

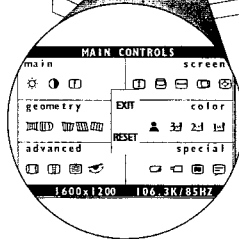


### HORIZONTAL POSITION

 Horizontal Position shifts the image on your screen either to the left or right. Use this feature if your image does not appear centered.



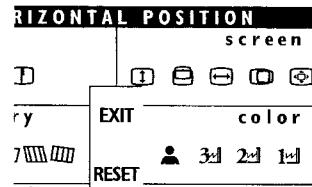
Press the On Screen Display button.



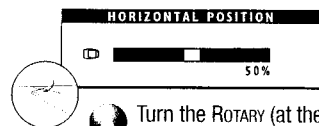
Turn the ROTARY knob until the SCREEN SIZE & POSITION window is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until HORIZONTAL POSITION is highlighted.



Press the On Screen Display button to return to SCREEN SIZE & POSITION.



Press the On Screen Display button to bring up HORIZONTAL POSITION screen.



Turn the ROTARY (at the lower right-hand corner of the monitor) knob until the image is horizontally balanced.

### SMART HELP

#### After returning to SCREEN SIZE & POSITION ...

... to continue to HORIZONTAL POSITION, turn the ROTARY knob until HORIZONTAL POSITION is highlighted. Next, follow steps 3 - 5 under HORIZONTAL POSITION.

... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

### SMART HELP

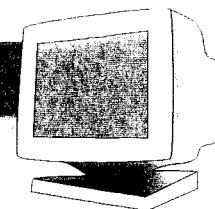
#### After returning to SCREEN SIZE & POSITION ...

... to continue to HORIZONTAL SIZE, turn the ROTARY knob until HORIZONTAL SIZE is highlighted. Next, follow steps 3 - 5 under HORIZONTAL SIZE (on the next page).

... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

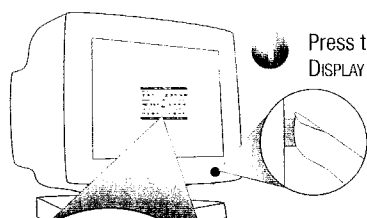
# HOW TO USE THE ON SCREEN DISPLAY (OSD)

## SCREEN SIZE & POSITION WINDOW

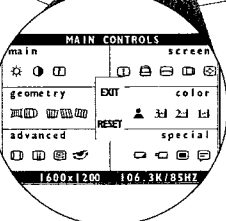


### HORIZONTAL SIZE

Horizontal Size expands or contracts the image on your screen, pushing it out toward the left and right sides or pulling it in toward the center.



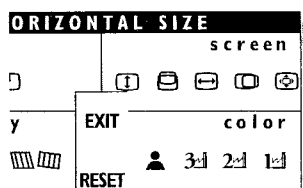
Press the On Screen Display button.



Turn the ROTARY knob until the SCREEN SIZE & POSITION window is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until HORIZONTAL Size is highlighted.



Press the On Screen Display button to return to SCREEN SIZE & POSITION.



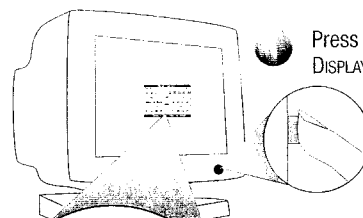
Press the On Screen Display button to bring up HORIZONTAL Size screen.



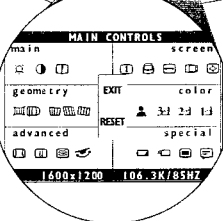
Turn the ROTARY knob (at the lower right-hand corner of the monitor) until the image is the horizontal size you want.

### VERTICAL POSITION

Vertical Position adjusts the image on your screen either up or down. Use this feature if your image does not appear centered. Vertical Size expands or contracts the image on your screen, pushing it out toward the top and bottom sides or pulling it in toward the center.



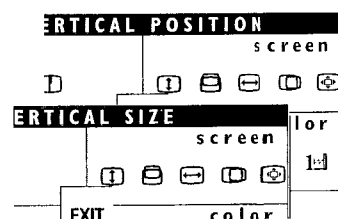
Press the On Screen Display button.



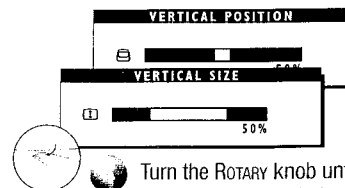
Turn the ROTARY knob until the SCREEN SIZE & POSITION window is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until VERTICAL POSITION or VERTICAL Size is highlighted.



Press the On Screen Display button to return to SCREEN SIZE & POSITION.



Press the On Screen Display button to bring up VERTICAL POSITION or VERTICAL Size screen.



Turn the ROTARY knob until the image is vertically balanced or the vertical size you want.

### SMART HELP

#### After returning to SCREEN SIZE & POSITION ...

... to continue to VERTICAL POSITION, turn the ROTARY knob until VERTICAL POSITION is highlighted. Next, follow steps 3 - 5 under VERTICAL POSITION.

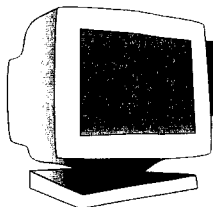
... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

### SMART HELP

#### After returning to SCREEN SIZE & POSITION ...

... to continue to COLOR TEMPERATURE, turn the ROTARY knob until EXIT is highlighted. Next, press the OSD button. Then follow steps 2-4 under COLOR TEMPERATURE WINDOW on the next page.

... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

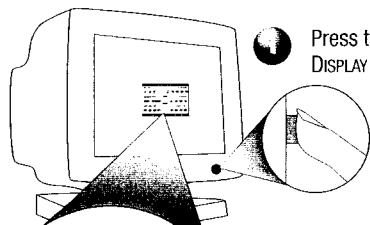


# HOW TO USE THE ON SCREEN DISPLAY (OSD)

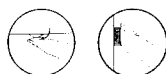
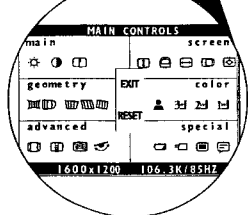
## COLOR TEMPERATURE WINDOW

**9300 K CAD/CAM / 6500 K DTP  
5500 K PHOTO RETOUCH**

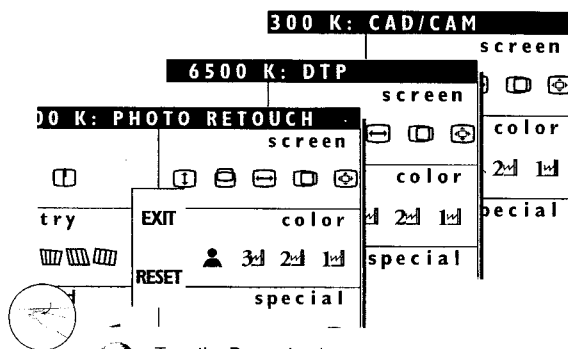
**1** **2** **3** Your monitor has three preset options you can choose from. One **1** for Computer Aided Design (CAD) work. Two **2** for Desktop Publishing (DTP). And three **3** for Photo Retouch. When you select an option, the computer automatically adjusts itself for that selection.



Press the On Screen Display button.

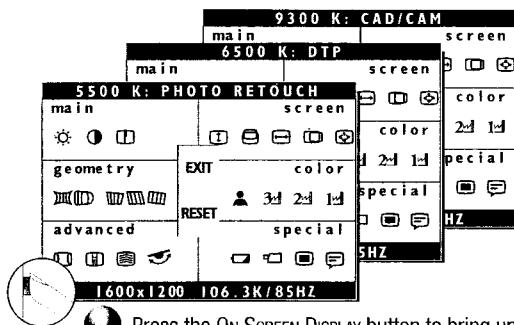


Turn the ROTARY knob until the COLOR TEMPERATURE window is highlighted. Then press the On Screen Display button.



Turn the ROTARY knob until CAD/CAM, DTP, or PHOTO RETOUCH is highlighted.

After each preset setting is saved, the on screen display automatically returns to the COLOR TEMPERATURE window. To save the next preset setting, simply repeat the steps listed here.



Press the On Screen Display button to bring up and save the preset settings for 9300 K CAD/CAM, 6500 K DTP, or 5500 K PHOTO RETOUCH.

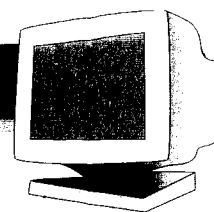
## SMART HELP

### After returning to COLOR TEMPERATURE ...

- ... to continue to USER PRESETS, turn the ROTARY knob until USER PRESETS is highlighted. Next, follow steps 3 - 9 under USER PRESETS on the next page.
- ... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

# HOW TO USE THE ON SCREEN DISPLAY (OSD)

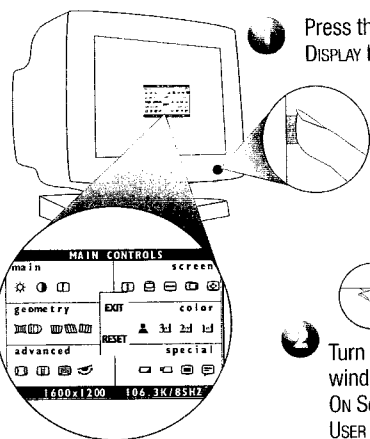
## COLOR TEMPERATURE WINDOW



### USER PRESETS



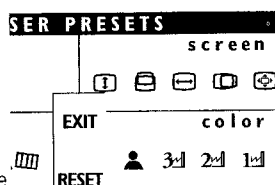
If you need to adjust any of the three preset options (CAD/CAM, DTP, or PHOTO RETOUCH), follow the steps below to modify the colors that appear on your screen. You can make individual adjustments to each of the preset options.



Press the On Screen Display button.



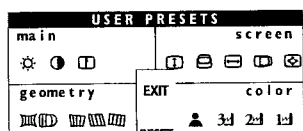
Turn the ROTARY knob until the COLOR window is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until USER PRESETS icon is highlighted.



Press the On Screen Display button to bring up the USER PRESETS window.



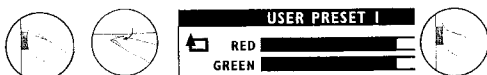
You will now be back at the USER PRESETS window. See SMART HELP below for options.



If necessary, turn the ROTARY knob until **1** of the USER PRESETS is highlighted. Next, press the On Screen Display button.



To exit User PRESET 1, press the On Screen Display button.



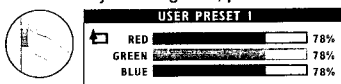
When done with green, press the On Screen Display button. Turn rotary to BLUE, BLUE will be highlighted.



To adjust the blue, press the On Screen Display button again. Then, turn the ROTARY knob to increase or decrease the blue.



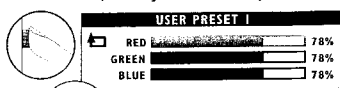
When done with red, press the On Screen Display button. Turn rotary to GREEN, GREEN will be highlighted. To adjust the green, press the On



Screen Display button again. Then, turn the ROTARY knob to increase or decrease the green.



First, press the On Screen Display button. RED will be highlighted. Next, to adjust the red, press the



On Screen Display button again. Then, turn the ROTARY knob to increase or decrease the red.

### SMART HELP

#### USER PRESETS

GO BACK

1

2

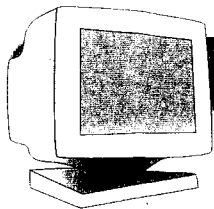
To exit User PRESETS (step 3 above), turn the ROTARY knob until the Go Back icon is highlighted. Go Back appears by the icon when highlighted. Next, press the On Screen Display button. You will be back at the COLOR TEMPERATURE window.

After returning to COLOR TEMPERATURE...

... to continue to User PRESET 2 or 3, repeat steps 3 through 8, selecting either User PRESET 2 or User PRESET 3.

... to continue to SPECIAL CONTROLS window, turn the ROTARY knob until EXIT is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until SPECIAL CONTROLS is highlighted. Now, follow steps 2 - 5 under SPECIAL CONTROLS on the next page.

... to exit the On Screen Display completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

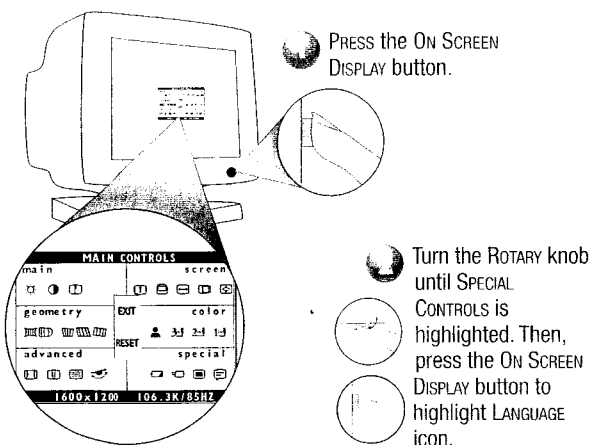


# HOW TO USE THE ON SCREEN DISPLAY (OSD)

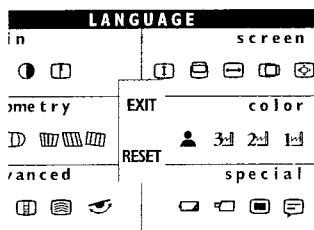
## SPECIAL CONTROLS WINDOW

### LANGUAGE

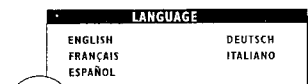
The On Screen Display shows its settings in one of five languages. The default is English, but you can select French, Spanish, German, or Italian.



Press the ON SCREEN DISPLAY button to confirm your selection and return to SPECIAL CONTROLS.



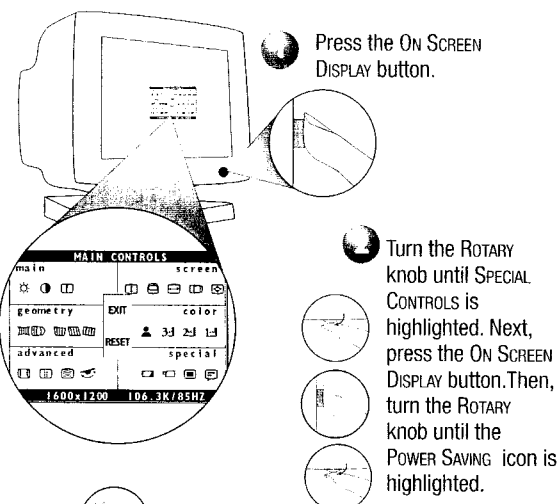
Press the ON SCREEN DISPLAY button to bring up LANGUAGE screen.



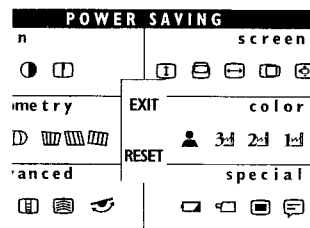
Turn the ROTARY knob (at the lower right-hand corner of the monitor) until desired language is selected.

### POWER SAVING

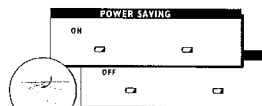
POWER SAVING helps save energy when the monitor is on but not being used. After a preset time, the monitor will go blank if not being used. To select POWER SAVING, follow the steps below.



Press the ON SCREEN DISPLAY button to confirm your selection and return to SPECIAL CONTROLS.



Press the ON SCREEN DISPLAY button to bring up POWER SAVING screen.



Turn the ROTARY knob to select POWER SAVING ON or OFF.

### SMART HELP

#### After returning to SPECIAL CONTROLS ...

... to continue to POWER SAVING, turn the ROTARY knob until POWER SAVING icon is highlighted. Next, follow steps 3 - 6 under POWER SAVING ... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

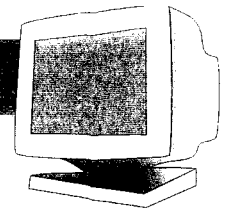
### SMART HELP

#### After returning to SPECIAL CONTROLS ...

... to continue to OSD CONTROLS, turn the ROTARY knob until OSD CONTROLS icon is highlighted. Next, follow steps 3 - 6 under OSD CONTROLS ... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

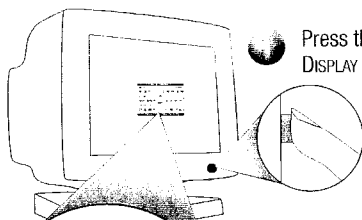
# HOW TO USE THE ON SCREEN DISPLAY (OSD)

## SPECIAL CONTROLS WINDOW

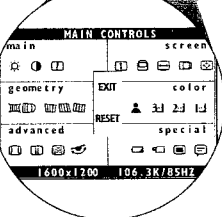


### OSD CONTROLS

- WITH OSD CONTROLS, you can set the time for the On Screen Display to time out, and change the vertical and horizontal position of the OSD on the monitor screen.

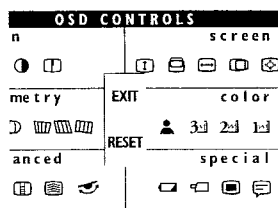


Press the On Screen Display button.



Turn the ROTARY knob until SPECIAL CONTROLS is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until the OSD CONTROLS icon is highlighted.

Turn the ROTARY knob to select either VERTICAL or HORIZONTAL Position and repeat steps 3 - 6.

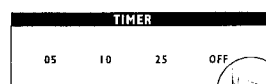


Press the On Screen Display button to add your change and return to OSD CONTROLS.



Press the On Screen Display button to bring up OSD CONTROLS screen.

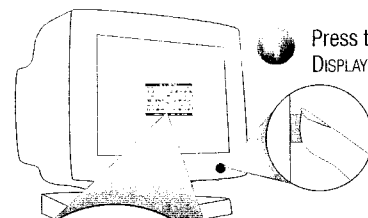
Turn the ROTARY knob to select 05, 10, 25 seconds, or OFF.



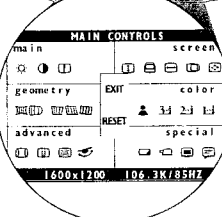
Press the On Screen Display button to bring up TIMER screen.

### VIDEO INPUT

- VIDEO INPUT helps determine what you see on the screen. It is set at 0.7V(olts), but if the video input signal is different than the output signal, you may want to change it to 1.0V.



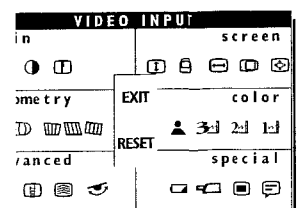
Press the On Screen Display button.



Turn the ROTARY knob until SPECIAL CONTROLS is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until the VIDEO INPUT icon is highlighted.



Press the On Screen Display button to save your selection and return to SPECIAL CONTROLS.



Press the On Screen Display button. The VIDEO INPUT screen appears.



Turn the ROTARY knob to select either 0.7V or 1.0V.

### SMART HELP

After returning to SPECIAL CONTROLS...

... to continue to VIDEO INPUT, turn the ROTARY knob until Go BACK is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until the VIDEO INPUT icon is highlighted. Next, follow steps 3 - 6 under VIDEO INPUT.

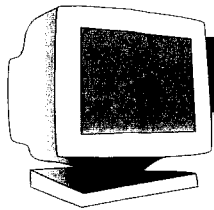
... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)



### SMART HELP

After returning to SPECIAL CONTROLS...

... to continue to ADVANCED CONTROLS, turn the ROTARY knob until EXIT is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob to ADVANCED CONTROLS window and go to the next page. ... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

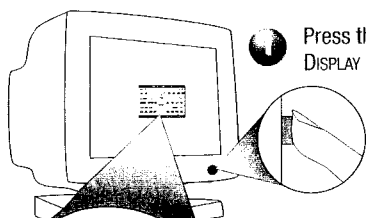


# HOW TO USE THE ON SCREEN DISPLAY (OSD)

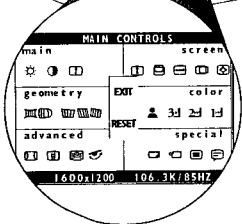
## ADVANCED CONTROLS WINDOW

### ROTARY DEFAULT

**ROTARY DEFAULT** allows you to pick the feature your ROTARY knob will default to when not used in adjusting your ON SCREEN DISPLAY. The normal default is brightness. To select your ROTARY DEFAULT, follow the steps below.



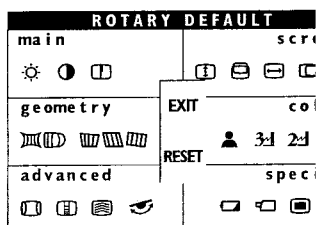
Press the ON SCREEN DISPLAY button.



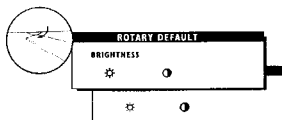
Turn the ROTARY knob until **ADVANCED CONTROLS** is highlighted. Then, press the ON SCREEN DISPLAY button to highlight **ROTARY DEFAULT** icon.



Press the ON SCREEN DISPLAY button to add your adjustment and return to **ADVANCED CONTROLS**.



Press the ON SCREEN DISPLAY button to bring up **ROTARY DEFAULT** screen.



Turn the ROTARY knob to select **BRIGHTNESS, CONTRAST**

### SMART HELP

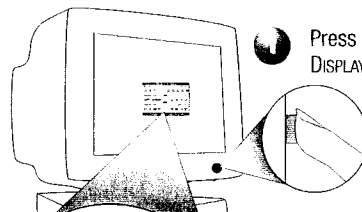
#### After returning to **ADVANCED CONTROLS** ...

... to continue to **MOIRE**, turn the ROTARY knob until **MOIRE** is highlighted. Next, follow steps 3 - 5 under **MOIRE**.

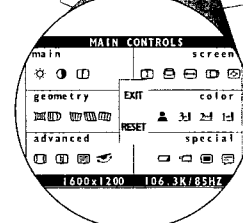
... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

### MOIRE

**MOIRE** is a fringe pattern arising from the interference between two superimposed line patterns. To adjust your **MOIRE**, follow the steps below. *Note: Use only if necessary. By activating **MOIRE**, sharpness can be affected.*



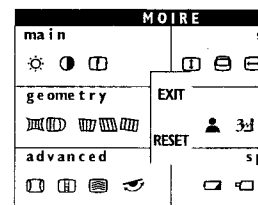
Press the ON SCREEN DISPLAY button.



Turn the ROTARY knob until **ADVANCED CONTROLS** is highlighted. Next, press the ON SCREEN DISPLAY button. Then, turn the ROTARY knob until the **MOIRE** icon is highlighted.



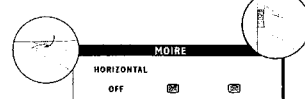
Press the ON SCREEN DISPLAY button to add your adjustment and to bring up **ADVANCED CONTROLS** screen. See **SMART HELP** to select **VERTICAL MOIRE** or turn **MOIRE OFF**.



Press the ON SCREEN DISPLAY button to bring up **MOIRE** screen.



Turn the ROTARY knob to adjust the moire.



Turn the ROTARY knob until **HORIZONTAL MOIRE** is highlighted. Then, press the ON SCREEN DISPLAY button.

### SMART HELP

...to select **VERTICAL MOIRE** or to turn **MOIRE** off, follow the steps above, selecting **VERTICAL MOIRE** or **MOIRE OFF** in STEP 4.

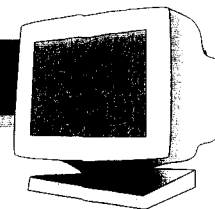
#### After returning to **ADVANCED CONTROLS** ...

... to continue to **VERTICAL LINEARITY**, turn the ROTARY knob until **VERTICAL LINEARITY** icon is highlighted. Next, follow steps 4 - 5 under **VERTICAL LINEARITY** (on the next page).


... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

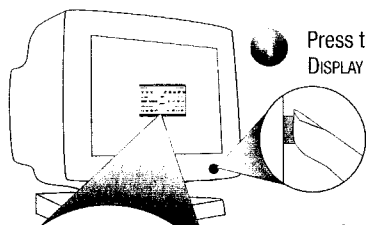
# HOW TO USE THE ON SCREEN DISPLAY (OSD)

## ADVANCED CONTROLS WINDOW

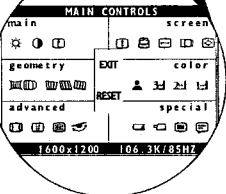


### VERTICAL LINEARITY

 Linearity is the degree with which the actual location of a pixel on the screen corresponds with its intended location. To adjust your VERTICAL LINEARITY, follow the steps below.



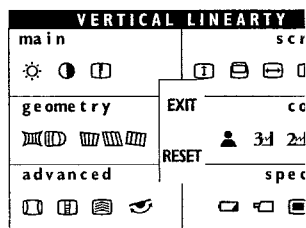
Press the On Screen Display button.



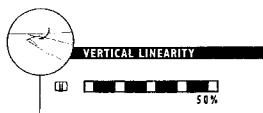
Turn the ROTARY knob until ADVANCED CONTROLS is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until the VERTICAL LINEARITY icon is highlighted.



Press the On Screen Display button to add your adjustment and to bring up ADVANCED CONTROLS screen.




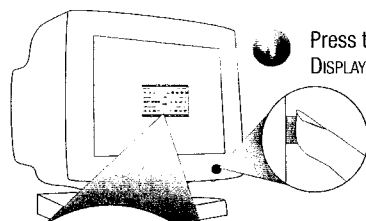
Press the On Screen Display button to bring up VERTICAL LINEARITY screen.



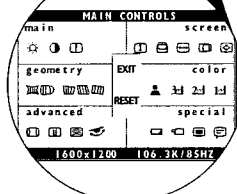
Turn the ROTARY knob to adjust the vertical linearity.

### CORNER CORRECTION

 CORNER CORRECTION "squares up" the corners of an image on the screen. To adjust your CORNER CORRECTION, follow the steps below.



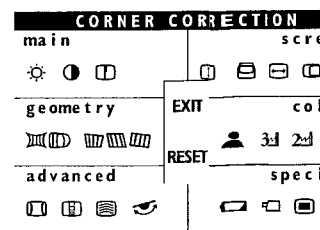
Press the On Screen Display button.



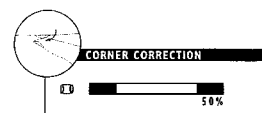
Turn the ROTARY knob until ADVANCED CONTROLS is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until the CORNER CORRECTION icon is highlighted.



Press the On Screen Display button to bring up ADVANCED CONTROLS screen.



Press the On Screen Display button to bring up CORNER CORRECTION screen.



Turn the ROTARY knob until desired corner correction is selected.

### SMART HELP

#### After returning to ADVANCED CONTROLS ...

... to continue to CORNER CORRECTION, turn the ROTARY knob until CORNER CORRECTION icon is highlighted. Next, follow steps 3 - 4 under CORNER CORRECTION.

... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)

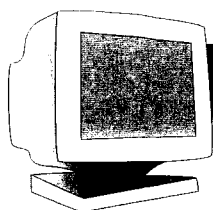
### SMART HELP

#### After returning to ADVANCED CONTROLS ...

... to continue to GEOMETRY WINDOW, turn the ROTARY knob until EXIT is highlighted. Next, press the OSD button. Then follow steps 2a - 2c under GEOMETRY WINDOW on the next page.

... to exit completely, press the OSD button and hold for 1.5 seconds. (See page 15 for other exit options.)





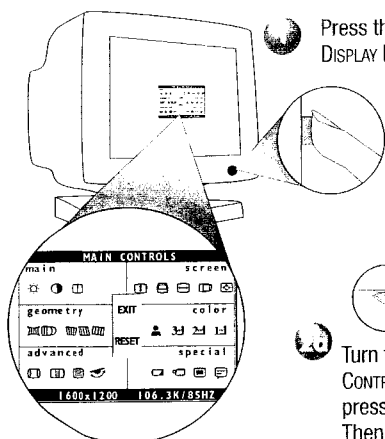
# HOW TO USE THE ON SCREEN DISPLAY (OSD)

## GEOMETRY CONTROLS WINDOW

### PINCUSHION, BALANCED PINCUSHION, TRAPEZOID, PARALLELOGRAM, ROTATION

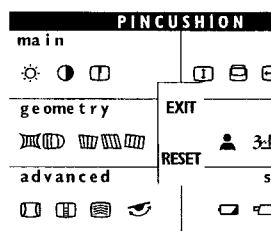


Follow the steps below to adjust any of the five preset options (PINCUSHION, BALANCED PINCUSHION, TRAPEZOID, PARALLELOGRAM, or ROTATION). You can make individual adjustments to each of the preset options. *Note: use these features only when the picture is not square.*



Press the On Screen Display button.

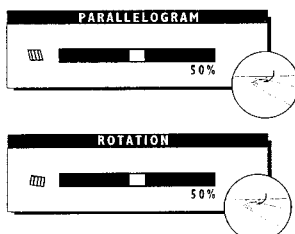
Turn the ROTARY knob until the GEOMETRY CONTROLS window is highlighted. Next, press the On Screen Display button. Then, if necessary, turn the ROTARY knob until PINCUSHION icon is highlighted.



Press the On Screen Display button. Then, turn the ROTARY knob to adjust the pincushion.

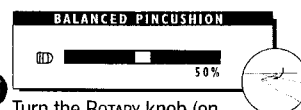


To select PARALLELOGRAM or ROTATION, turn the ROTARY knob until PARALLELOGRAM or ROTATION icon is highlighted. Next, press the On Screen Display button. Then follow steps 4b and 4c to make the appropriate changes.



When done, press the On Screen Display button to save the change and return to GEOMETRY CONTROLS window.

To select BALANCED PINCUSHION, turn the ROTARY knob until BALANCED PINCUSHION is highlighted. Next, press the On Screen Display button.



When done, press the On Screen Display button. This will save the change and return the screen to GEOMETRY CONTROLS window.



Turn the ROTARY knob to adjust the trapezoid.

To select TRAPEZOID, turn the ROTARY knob until TRAPEZOID icon is highlighted. Next, press the On Screen Display button.

When done, press the On Screen Display button. This will save the change and return the screen to GEOMETRY CONTROLS.

Turn the ROTARY knob (on the lower right-hand corner of the monitor) to adjust the balanced pincushion.

## SMART HELP

### To exit GEOMETRY CONTROLS ...

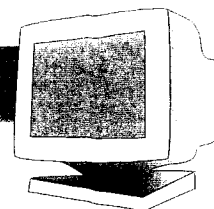
... but continue to another window, turn the ROTARY knob until Exit is highlighted. Next, press the On Screen Display button. Then, turn the ROTARY knob until that window is highlighted. Now, press the On Screen Display button and follow the instructions for that window.

... completely, press the On Screen Display button and hold for 1.5 seconds. The On Screen Display will disappear. All changes will be saved.

To make changes to one item, follow the steps for that item. Then, follow "To exit GEOMETRY CONTROLS ..."

To return to factory presets, see "To Reset an Individual Window" on page 15.

# HOW TO USE THE ON SCREEN DISPLAY (OSD)

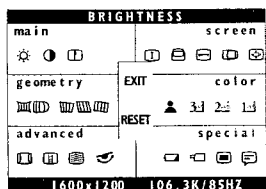


## EXIT AND RESET

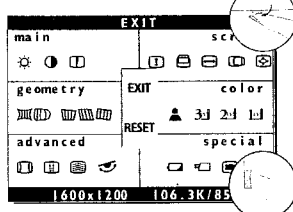
### EXIT & RESET FROM A WINDOW

Choosing EXIT allows you to go to another window. Choosing RESET returns all the settings in that window to factory presets.

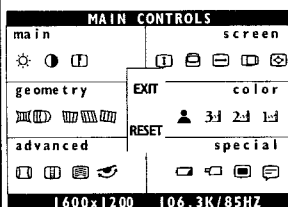
#### TO EXIT AN INDIVIDUAL WINDOW



Make sure you are at a window. For example, MAIN CONTROLS. An icon will be highlighted. For example, BRIGHTNESS.

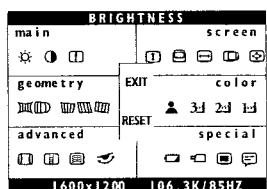


Turn the ROTARY knob until EXIT is highlighted. Next, press the ON SCREEN DISPLAY button.

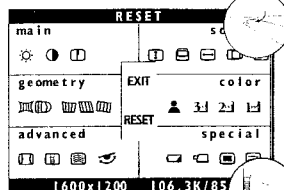


An entire window is now highlighted. Turn the ROTARY knob to another window and begin adjustments, or turn the knob until EXIT is highlighted as shown in EXIT FROM OSD (at right).

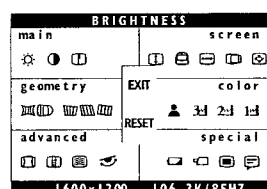
#### TO RESET AN INDIVIDUAL WINDOW



Make sure you are at a window. For example, MAIN CONTROLS. An icon will be highlighted. For example, BRIGHTNESS.



Turn the ROTARY knob until RESET is highlighted. Next, press the ON SCREEN DISPLAY button.

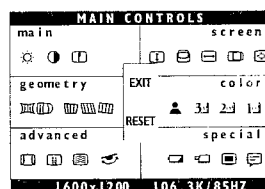


The first icon in the reset window is now highlighted. Turn the ROTARY knob to select another icon and begin adjustments, or turn the knob until EXIT is highlighted as shown above.

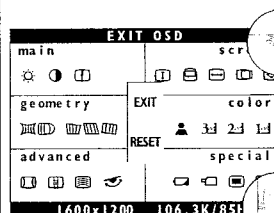
### EXIT & RESET FROM THE ON SCREEN DISPLAY

Exiting from the On Screen Display removes the On Screen Display from the monitor screen. Resetting from the On Screen Display returns everything in all the windows to factory presets.

#### TO EXIT AN ENTIRE ON SCREEN DISPLAY

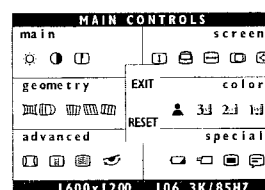


Make sure you have exited from all icons in a window. (See TO EXIT FROM AN INDIVIDUAL WINDOW.) For example, MAIN CONTROLS will be highlighted.

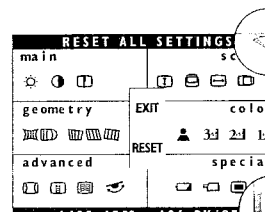


Turn the ROTARY knob until EXIT is highlighted. Next, press the ON SCREEN DISPLAY button. The On Screen Display will disappear.

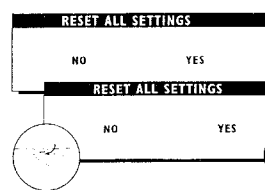
#### RESET ENTIRE ON SCREEN DISPLAY



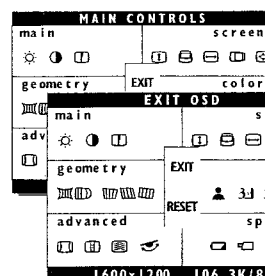
Make sure you have exited from all icons in a window. (See TO EXIT FROM AN INDIVIDUAL WINDOW.) For example, MAIN CONTROLS will be highlighted.



Turn the ROTARY knob until RESET is highlighted. Next, press the ON SCREEN DISPLAY button.

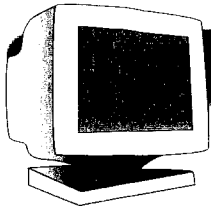


Turn the ROTARY knob to select No or Yes. Then press the ON SCREEN DISPLAY button.



If No is selected the On Screen Display appears and MAIN CONTROLS is highlighted.

If Yes is selected the EXIT OSD screen appears.



## ADDITIONAL HOOK UP OPTIONS

### BNC AND USB SET UPS

#### BNC CONNECTIONS

BNC is another way to connect the monitor to the computer. This connection requires an optional BNC cable. It can be connected to either a Macintosh- or IBM-compatible computer. For those who work with graphics or designs, this option may be better.

**Note:** Be sure to flip the D-Sub/BNC switch to BNC when using this connection.

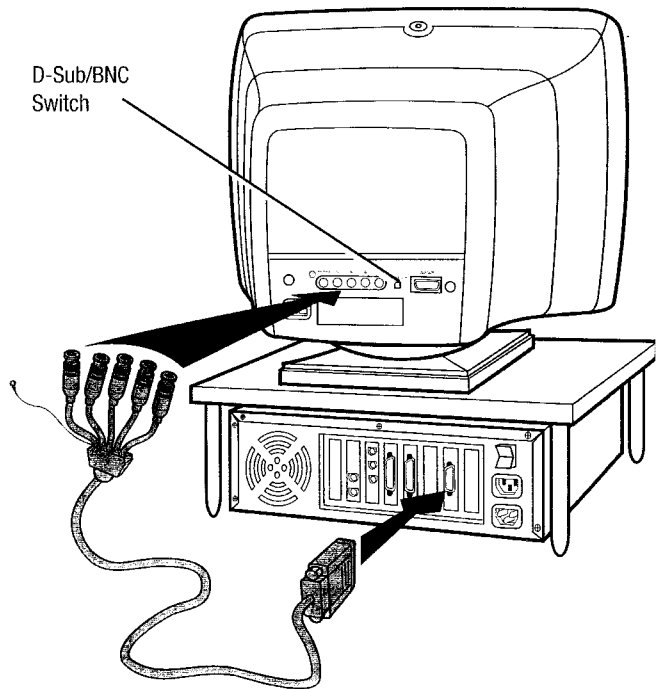
##### For an IBM-compatible computer:

1. Turn off the computer.
2. Connect the (optional) BNC monitor cable and set D-Sub/BNC switch to BNC.
3. Connect the shielded power cable.
4. Turn on the monitor. Then turn on the computer.
5. If you have Windows '95, follow the "If you have Windows '95" steps on the Setting Up foldout sheet.

##### For a Macintosh-type computer:

1. Connect the Mac adapter to one end of the monitor cable.
2. Turn off the computer.
3. Connect the (optional) BNC monitor cable and set D-Sub/BNC switch to BNC.
4. Connect the shielded power cable.
5. Turn on the monitor. Then turn on the computer.

D-Sub/BNC Switch



Refer to the "Setting Up your Philips monitor" foldout for a more detailed guide to setting up your monitor.

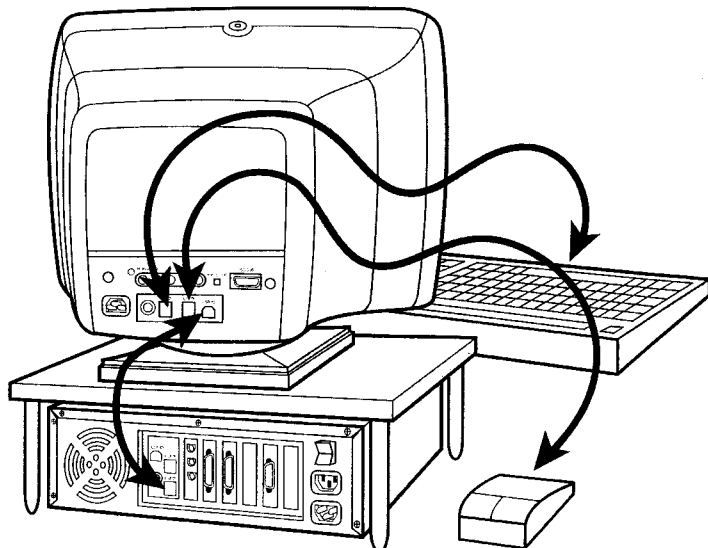
#### USB CONNECTIONS

USB (Universal Serial Bus) is an innovation in connecting your IBM-compatible computer to your monitor. By using the USB, you will be able to connect your keyboard, mouse, printer, and other peripherals to your monitor instead of having to connect them to your computer. This will give you greater flexibility in setting up your system. Plus, you will have true plug-and-play capability. While the software is still being developed, Philips has included the hardware so you will be ready to take advantage of this next generation in computer development.

##### For an IBM-compatible Computer:

1. Turn off the computer.
2. Connect the (optional) USB Hub and cable to the computer and to the monitor. (Computer must have USB port.)
3. Connect the shielded power cable.
4. Turn on the monitor. Then turn on the computer.
5. With the installation of the correct software, you will be able to connect specially-made peripherals to the monitor.

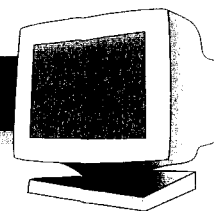
**Note:** USB Hub and cables sold separately. USB Bay exists in back of monitor.



Refer to the "Setting Up your Philips monitor" foldout for a more detailed guide to setting up your monitor.

## ADDITIONAL INFORMATION

### POWER SAVING FEATURE



### AUTOMATIC POWER SAVINGS & PRESET RESOLUTION MODES

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce its power consumption when not in use. If input from a keyboard, mouse, or other device is detected, the monitor automatically "wakes up." The table directly below shows the power consumption and signalling of this automatic power-saving feature. To turn this feature on and off, see page 10. The tables at the bottom of the page show the 13/14 factory preset resolution modes. This leaves room for additions.



Power Management Definition

VESA's mode	Video	H-sync	V-sync	Power used	Power saving(%)	LED color
ON	Active	Yes	Yes	< 160W	0%	Green
Stand-by	Blanked	No	Yes	< 15W	87.5%	Yellow
Suspend	Blanked	Yes	No	< 15W	87.5%	Yellow
OFF	Blanked	No	No	< 5W	95.8%	Amber

This monitor is Energy Star compliant and power management compatible.

AS AN ENERGY STAR PARTNER, PHILIPS HAS DETERMINED THAT THIS PRODUCT MEETS THE ENERGY STAR GUIDELINES FOR ENERGY EFFICIENCY.

The proper operation of the function requires a computer with VESA DPMS power management capabilities. When used with a computer equipped with VESA DPMS, the monitor is Energy Star compliant.

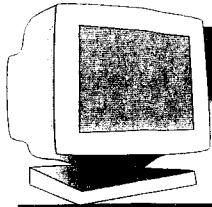
### 201B

Factory Preset Resolution Modes				
MODE	RESOLUTION	H. FREQ. (KHz)	V. FREQ. (Hz)	STANDARD
1	640 x 400	31.5	70	VGA
2	640 x 480	31.5	60	VGA
3	640 x 480	37.5	75	VESA/75
4	800 x 600	46.9	75	VESA/75
5	800 x 600	53.7	85	VESA/85
6	1024 x 768	60	75	VESA/75
7	1024 x 768	68.7	85	VESA/85
8	1152 x 870	69.0	75	MAC
9	1152 x 900	71.8	76	SUN SPARC
10	1280 x 1024	80.0	75	VESA/75
11	1280 x 1024	91.1	85	VESA/85
12	1600 x 1200	106.3	85	VESA/85
13	1800 x 1350	105.5	75	

### 201P

Factory Preset Resolution Modes				
MODE	RESOLUTION	H. FREQ. (KHz)	V. FREQ. (Hz)	STANDARD
1	640 x 400	31.5	70	VGA
2	640 x 480	31.5	60	VGA
3	640 x 480	37.5	75	VESA/75
4	800 x 600	46.9	75	VESA/75
5	800 x 600	53.7	85	VESA/85
6	1024 x 768	60	75	VESA/75
7	1024 x 768	68.7	85	VESA/85
8	1152 x 870	69.0	75	MAC
9	1152 x 900	71.8	76	SUN SPARC
10	1280 x 1024	80.0	75	VESA/75
11	1280 x 1024	91.1	85	VESA/85
12	1600 x 1200	106.3	85	VESA/85
13	1800 x 1350	105.5	75	
14	1600 x 1200	112.5	90	

Unit is capable of up to 1800 x 1440 with user definable modes. 201P/201B Monitors are compliant with EISA standard timing requirements.



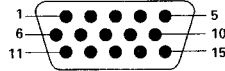
## ADDITIONAL INFORMATION

COMING TO TERMS WITH THIS BOOK

### PIN ASSIGNMENT

The 15-pin D-sub connector (male) of the signal cable:

Pin No.	Assignment
1	Red video input
2	Green video input
3	Blue video input
4	Identical output - connected to pin 10
5	Self test
6	Red video ground
7	Green video ground
8	Blue video ground
9	No pin
10	Logic ground
11	Identical output - connected to pin 10
12	Serial data line (SDA)
13	H. Sync / H+V
14	V. Sync (VCLK for DDC)
15	Data clock line (SCL)



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### SPECIFICATIONS

#### GENERAL

##### CRT

Screen size	:21" (53.3 cm) flat & square
Viewable Image Size (VIS)	:19.9"
Focusing method	:Dynamic focus
Dot pitch	:0.22 mm (horizontal)
Phosphor	:P22 or equivalent, medium short persistence
Screen treatment	:ARASC

##### Display area

Factory preset	:380 mm (H) x 285 mm (V)
Maximum usable	:406 mm (H) x 304 mm (V)

##### Scanning frequency

Horizontal (line)	:30-115kHz(201P) (AutoScan) 30-107kHz(201B) (AutoScan)
Vertical (frame)	:50-160 Hz (AutoScan)

##### Input power

:100-240 V AC, 50-60 Hz

##### Power consumption

:110 Watt normal, 160 Watt max.

##### Thermal dissipation

: (201B) 375.4 BTU normal, 511.9 BTU maximum  
: (201P) 375.4 BTU normal, 546.1 BTU maximum

##### Input signal

Video	:0.7 or 1.0 Vpp, 75 Ohm impedance
Sync	:Separate sync. TTL level Composite sync. TTL level

##### Pedestal

Tilt	:5° forward, 11° backward
Swivel	:90° left, 90° right

##### Physical

Unit dimension (WxHxD)	:490 x 529 x 551 mm 19.3" x 21.7" x 20.8"
Net weight	:31.5 kg 69.3 lbs.

##### Operating conditions

Temperature	:0° C - 40° C 32° F - 104° F
Humidity	:10% - 90%

##### Storage conditions

Temperature	:-40° C - 60° C -20° F - 140° F
Humidity	:5% - 95%

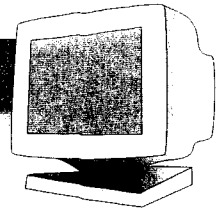
### GLOSSARY

Here are a few definitions that may help you.

Degauss	The process by which metal parts of the monitor are demagnetized in order to reduce screen distortion and color impurity.
D-Sub/ BNC	Two ways of connecting your monitor to your computer. Your monitor comes with a D-Sub cable. For work with a heavy emphasis on graphics, a BNC cable is recommended.
Geometry	A set of controls that allows you to adjust the alignment of the picture on the monitor screen. The goal is to "square up" the picture. This is done by adjusting such items as balanced pincushion, pincushion, parallelogram, rotation, and trapezoid.
Moire	A fringe pattern caused by the interference between two superimposed line patterns.
USB	Universal Serial Bus. A way to connect your computer, monitor, and peripherals for true Plug-and-Play functions.

## ADDITIONAL INFORMATION

### WHAT TO DO IF SOMETHING ISN'T WORKING



#### TROUBLESHOOTING

Having trouble? Something not working? Before calling for help, try these suggestions.

##### HAVING THIS PROBLEM?

No Picture  
(Power LED not lit)

##### CHECK THESE ITEMS

Make sure the Power cable is plugged in the wall and back of the monitor.  
Power button on top of the monitor should be in the ON position.  
Disconnect the monitor from the power outlet for about one minute.

No Picture  
(Power LED is Amber  
or Yellow in color)

Make sure the computer is turned on.  
Make sure the D-Sub/BNC switch on the rear of the monitor is in the correct position. See pages 2 and 16.  
Make sure the monitor cable is properly connected to your computer.  
Check to see if the monitor cable has bent pins.  
The Energy Saving Feature may be activated. See pages 12 and 17 for more detail.

No Picture  
(Power LED is Green  
in color)

Make the Brightness and Contrast controls are set correctly. See page 4 for details  
Make sure the D-Sub/BNC switch on the rear of the monitor is in the correct position. See pages 2 and 16.  
Make sure the monitor cable is properly connected to your computer.  
Check to see if the monitor cable has bent pins.  
Make sure the computer Power button is on.

Screen says



when you turn on  
the monitor.

Make sure the D-Sub/BNC switch on the rear of the monitor is in the correct position. See pages 2 and 16.  
Make sure the monitor cable is properly connected to your computer. See Setting Up foldout.  
Check to see if the monitor cable has bent pins.  
Make sure the computer is turned on

No Color

If you are using a non-VESA-DDC standard video card, consult your local Philips dealer or service organization to obtain an adapter.

Color appears blotchy

The picture may need degaussing. See page 5 for details.  
Remove any nearby magnetic objects.  
Face the monitor East for best picture quality.

Missing one or  
more colors

Check user settings of Color Temperature. See pages 8 and 9 for details.  
Make sure the monitor cable is properly connected to your computer.  
Check to see if the monitor cable has bent pins.

Dim Picture

Adjust the Brightness and Contrast controls. See page 4 for details.  
Check the Video Input selection and switch from 0.7 volts to 1.0 volts or 1.0 volts to 0.7 volts. See page 11.  
Check your video card and the manual instructions for it. It may be a non-VESA-DDC Standard card.

Picture is too large  
or too small

Adjust the Horizontal and/or Vertical Size. See pages 7 and 8 for details.

Edges of the picture  
are not square

The geometry controls require adjusting. See page 14 for details.

Picture has a double  
image

Eliminate the use of a video extension cable and/or video switch box.  
Face the monitor East for best picture quality.

Picture is not sharp

Check to make sure Moire is switched off. See page 12.

Unstable Picture

Increase your refresh rate. Consult your computer manual for details.

Windows '95 cannot  
find your video card

Select "Super VGA" under STANDARD DISPLAY TYPES, or contact your video card manufacturer for the right drivers.

# TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

## Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

## Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an s by the Ref. No. in the parts list and enclosed within a broken line\* (where several critical components are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug). Defeating this safety feature may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an ac leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safely operated without danger of electrical shock.

\* Broken line



## Implosion

1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

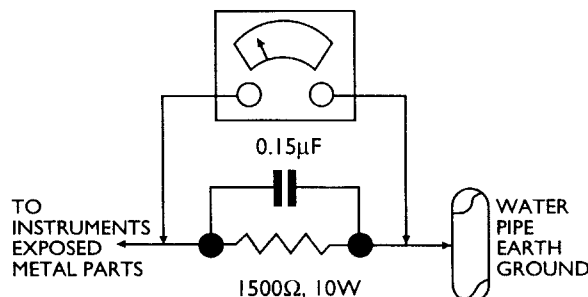
## X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.

6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

## Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



## Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10W resistor paralleled by a 0.15µF capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms/ volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

## Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

## Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

**WARNING:** Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.  
**SERVICE NOTE:** The CRT DAG is not at chassis ground.